

TAKE GREAT PICTURES OF PEOPLE

CAMERA BAG ESSENTIALS



COMPLETE PORTRAIT PHOTOGRAPHY GUIDE

196 PAGES OF EXPERT ADVICE & IDEAS

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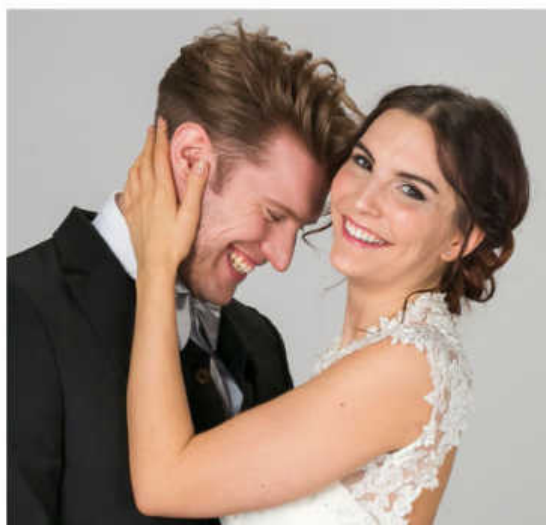
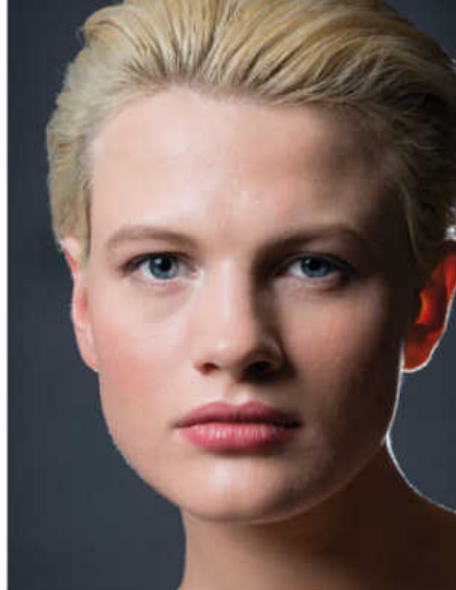
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CAMERA BAG ESSENTIALS

Welcome to *Camera Bag Essentials*, the compact photography reference no photographer should leave home without! This edition is devoted to portrait photography – providing you with a portable guide to getting great shots of people that you can carry around in your camera bag. Over six chapters, our experts explain key camera techniques and concepts in quick, easy-to-follow guides. Learn how to take better pictures by understanding how your camera works, discover what essential equipment you need to take stunning photos, and follow step-by-step guides to capture almost anything you would want to photograph. Our handy posing and lighting guides are designed to take the guesswork out of studio portrait photography. So whether you're still learning photography, or you're an old hand that needs a quick reminder about this or that key setting or technique, you'll find *Camera Bag Essentials* indispensable!

Chris

Chris George, Group Editor-in-Chief



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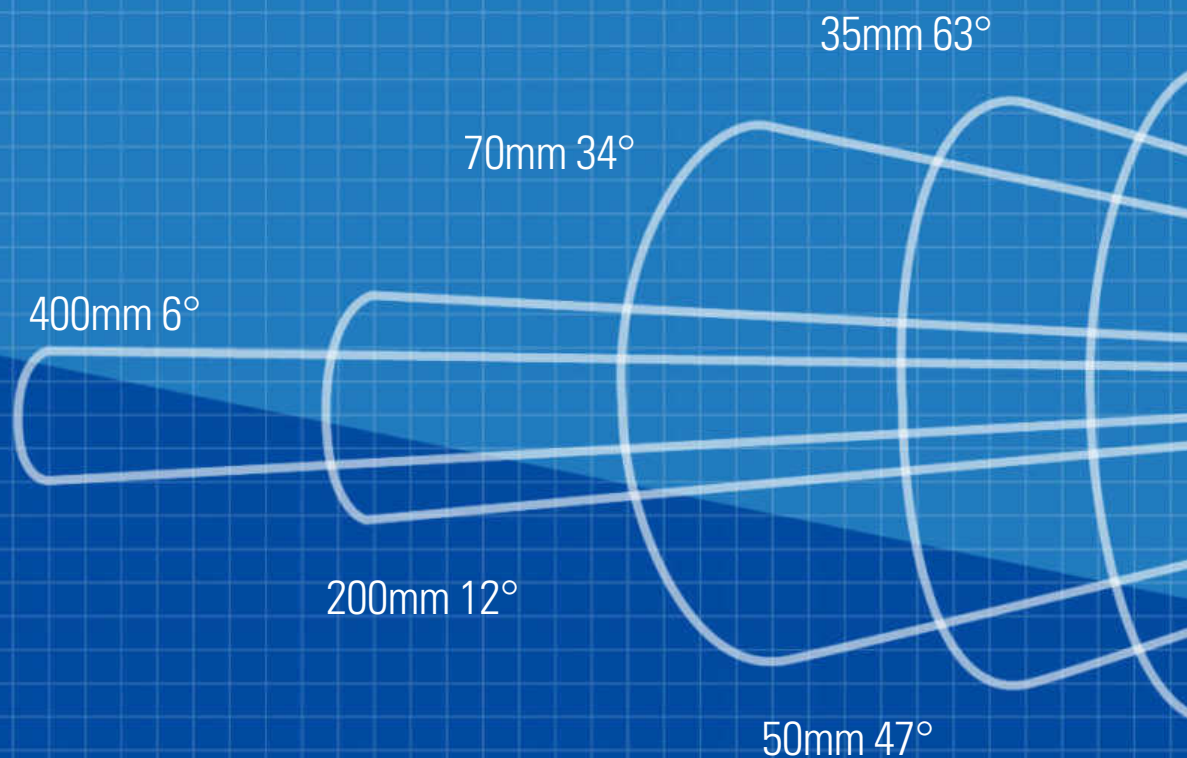
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CHAPTER 1



Quick reference

Key photographic concepts explained
with easy-to-follow diagrams

20mm

15mm Fisheye 180°

20mm 94°



In this section

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Digital SLR

Understand each of your digital SLR's dials, buttons and settings



1

LENS RELEASE

To remove the lens press this button and twist the lens in an anti-clockwise direction. Make sure you have the protective body cap or another lens to hand when performing this task, because you don't want to leave the sensor exposed to dust.

2

SHUTTER RELEASE

To capture a photograph, press the shutter release button on the top panel. To focus and meter the scene, half press the shutter release first.

3

LENS

The beauty of owning an SLR is that you can change the lens. This makes it far more versatile than a camera with a fixed lens because you can alter the angle of view.

4

SENSOR

The sensor is where your images are recorded, before being processed and then stored on your memory card. A mirror blocks the sensor and projects the scene up through the viewfinder. When you take a photograph, the

5

MODE DIAL

The mode dial is where you access the camera's shooting modes. Here you communicate with your SLR, telling it what you want it to control, and what you want to alter manually. For first-time users, the Fully Auto mode is appealing because it selects all the camera settings for you.

6

HOTSHOE

If you wish to attach an external flashgun, you can do so here. To attach a flashgun, slot it into place and secure it by tightening up the catch on the device.

mirror flips up out of the way so that the light can be recorded by the image sensor.



7

COMMAND DIAL

The command dial is used to alter camera settings and to adjust features.

8

LCD SCREEN

The LCD screen has lots of uses, including displaying images while reviewing or composing, and showing shooting information. Some digital SLRs and CSCs, include a rotatable LCD screen which aids creative framing.

9

BACK PANEL CONTROLS

The back panel multi-controller is the handy feature you use to alter settings and navigate through the menus. These buttons are also assigned to camera features. If you have a more advanced camera, you may have a mini joystick multi-controller.

10

VIEWFINDER

To compose an image, you look through the viewfinder on the back panel. Next to the viewfinder is the dioptre control, which you can tweak to adjust the screen inside your viewfinder to your vision.

11

MENU BUTTON

To access all the shooting, reviewing and other custom menu options, press the Menu button, then use the multi-controller and the OK button to navigate and select.

12

CONNECTION POINTS

To connect your camera to another device, such as a computer or a TV set, lift the rubber connection flap and insert the supplied cable into the correct port. You can also connect to a remote

shutter release here; handy if you want to take a photo without touching your camera.

13

FLASH

All of the beginner models of SLR and some in the enthusiast ranges include a built-in pop-up flash unit. Handy if you need to shine a bit of extra light on to your subject matter, but not as good as a proper flashgun. To activate it, you press the button marked with a lightning symbol. The built-in flash can also be used as a trigger for studio lights or external flashguns.

14

MEMORY CARD SLOT

On the other side of the camera is the memory card slot. Some SLRs include the memory card slot on the bottom of the camera in the battery compartment.

Exposure

Master the art of exposure and get pictures with punch by balancing aperture, shutter speed and ISO

Understanding how exposure works is probably the most fundamental photographic skill you need to master. Learn how to control your camera's aperture, shutter speed and ISO and you'll be able to take control of how your images look.

Whether you want to isolate the subject of your photo from the background with a shallow depth of field, or capture the misty effects of moving water as part of a moody seascape, you'll need to understand the basics of exposure.

At first it might seem that there are just too many options with apertures, histograms, ISOs, metering modes, f-stops and so on to juggle. However, once you understand the basic principles you'll have all the tools you need to take control and get creative. Today's digital SLRs come with functions and features to help you get the best out of your exposures, and they are all without doubt useful, but concentrate on the fundamental relationship between aperture, shutter speed and ISO, and maybe even restrict yourself to manual mode to begin with, and you'll learn the essence of creative photography.

Creating a harmonious exposure using the aperture, shutter speed and ISO is a juggling act. As soon as you make a decision about one

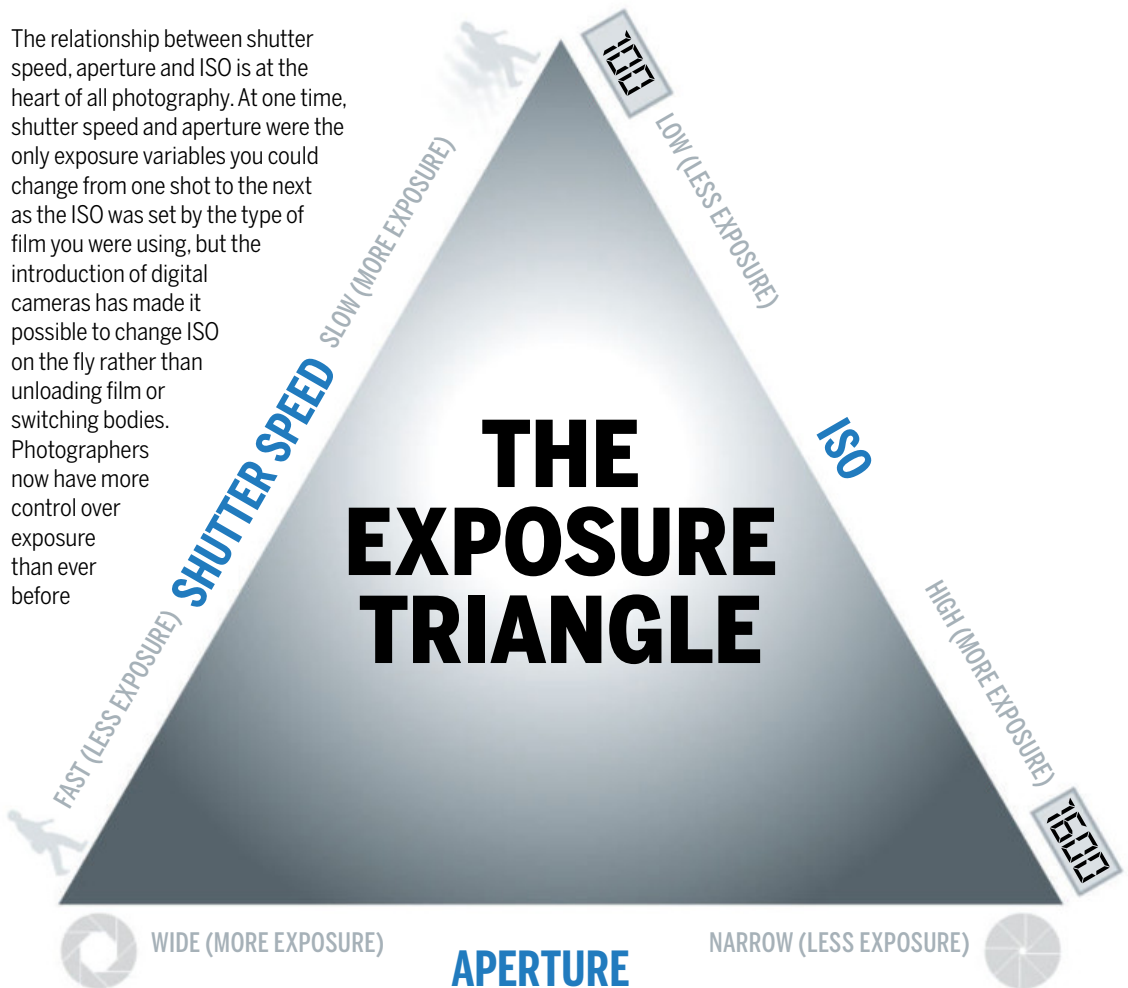


element, you'll need to compromise with another. The trick is get all three elements working together so you get the results you want and not what the camera tells you you can have. Because of that, it's really worth putting in the groundwork and getting to grips with the basics of

shutter speed (how long the camera's sensor is exposed to the light), aperture (how much light the lens lets in, which also affects depth of field) and ISO (the sensitivity level of the sensor). Once you know how to do this, there's nothing you can't do. Of course, getting a correct

Understand how exposure works by following this simple three-pointed guide

The relationship between shutter speed, aperture and ISO is at the heart of all photography. At one time, shutter speed and aperture were the only exposure variables you could change from one shot to the next as the ISO was set by the type of film you were using, but the introduction of digital cameras has made it possible to change ISO on the fly rather than unloading film or switching bodies. Photographers now have more control over exposure than ever before



exposure relies on the camera having achieved the optimum exposure reading to begin with, but this doesn't always happen. This is where exposure compensation plays a part.

Exposure compensation can be applied in aperture priority, shutter priority or program mode. It's also

measured in stops: the exposure indicator scale you see in the viewfinder or on your camera's rear display has stops clearly marked on it. You can usually increase or decrease the exposure by up to five stops.

You'll see that there are smaller marks on the scale, too. These

represent half-stops or third-stops, depending on how your camera is set up. Although exposure can be shifted in full stops, you get much finer control by adjusting the exposure in these smaller increments. You'll learn how to judge the adjustments needed once you understand histograms.

ONE EXPOSURE, THREE WAYS

There are three camera settings that enable you to control the exposure of a picture: aperture, shutter speed and ISO. All three elements need to be balanced to produce an acceptable exposure. This is where thinking about

exposure in terms of stops helps, as you can see in our examples of 'exposure maths'. The three exposures below would produce three images that have the same level of overall brightness, but each will look slightly different.

Aperture	Shutter	ISO
f/2.8	1/30	3,200
f/4	1/60	1,600
f/5.6	1/125	800
f/8	1/250	400
f/11	1/500	200
f/16	1/1000	100

This setting offers a reasonable depth of field with some risk of visual noise

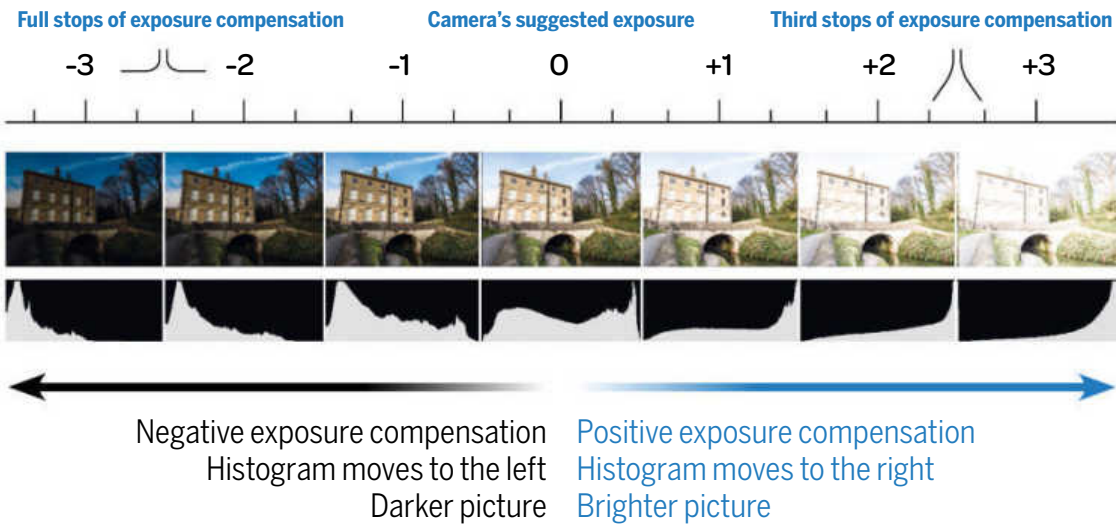
Aperture	Shutter	ISO
f/2.8	1/30	3,200
f/4	1/60	1,600
f/5.6	1/125	800
f/8	1/250	400
f/11	1/500	200
f/16	1/1000	100

Increasing the aperture to f/4 means the shutter can be open for less time

Aperture	Shutter	ISO
f/2.8	1/30	3,200
f/4	1/60	1,600
f/5.6	1/125	800
f/8	1/250	400
f/11	1/500	200
f/16	1/1000	100

Alternatively, a slow shutter speed means a narrower aperture is possible

EXPOSURE COMPENSATION



It's not uncommon for your camera's exposure meter to make mistakes. It's calibrated to produce a balanced exposure, but bright or dark scenes can fool it into dishing up images that are underexposed (too dark) or overexposed (too bright). Your camera's exposure compensation

function enables you to rectify this – or simply make a picture a little brighter or darker if that suits the subject or your tastes better.

The exposure setting that's adjusted when you use exposure compensation is determined by the shooting mode the camera is in. In

aperture priority mode, the aperture that you set remains fixed, so it's the shutter speed that's increased or decreased. In shutter priority mode, it's the aperture value that's altered to give a brighter or darker result. The ISO may also be adjusted if you've set it to Auto ISO.

Shooting modes

The shooting mode you choose affects the amount of control you have over camera settings



Auto mode

If you're a complete novice, this mode is ideal because the camera takes care of all the settings automatically



Sports mode

The flash is switched off and the camera uses faster shutter speeds to help freeze fast-moving subjects



Shutter Priority

Use this if you want to choose the shutter speed yourself. The camera will set the aperture automatically



Auto Flash Off mode

The same as Auto, but for museums, theatres or indoor sports venues



Close-up mode

This favours a narrow aperture to improve depth of field. Consider using a tripod when there's a risk of camera-shake



Program AE mode

Ideal for general use. The camera sets the shutter speed and aperture



Portrait mode

The camera softens skin tones and uses a wide aperture to throw the background out of focus



Night Portrait mode

The flash lights the subject, and a slower shutter speed captures the background



Landscape mode

Designed for vivid landscape shots taken in daylight. The built-in flash is switched off and you might need a tripod



Manual mode

This is designed for experts. You choose the shutter speed and aperture yourself, and the camera suggests settings



Child mode

In this mode, the camera makes backgrounds and clothing colourful but keeps any skin tones

present soft and natural-looking



Aperture Priority

Use this if you want to choose the aperture yourself. The camera will set the shutter

speed automatically for the correct exposure



GUIDE

A special feature on some Nikon cameras that shows you what to do as you're taking pictures. It's a great way for

beginners to learn about photography

Some camera modes are more useful than others – it depends on how much control you want to have over settings. When you choose a shutter speed (or aperture), the aperture (or shutter speed) has to change as well in order for the overall exposure to be right. The exposure

mode you use dictates how the particular pairings of shutter speed and aperture are chosen, and the exposure modes on a typical D-SLR can be broken into three types. The traditional ones are known as the 'PASM' modes. Each enables you to specify exactly what shutter speed or aperture you use, giving

you full creative control. The second group consists of the Scene modes, such as Portrait, Landscape and Sports. These are fully automatic exposure modes that set the shutter speed and aperture for you. The third group of modes are 'point and shoot' ones designed for beginners.

Aperture

Understand aperture and f-stops and you'll get sharper, more creative shots

The concept of aperture can be tricky to grasp. The physical side of it is incredibly simple. Here's what's going on inside your lens barrel, where a motor keeps aperture under control...

Iris blades

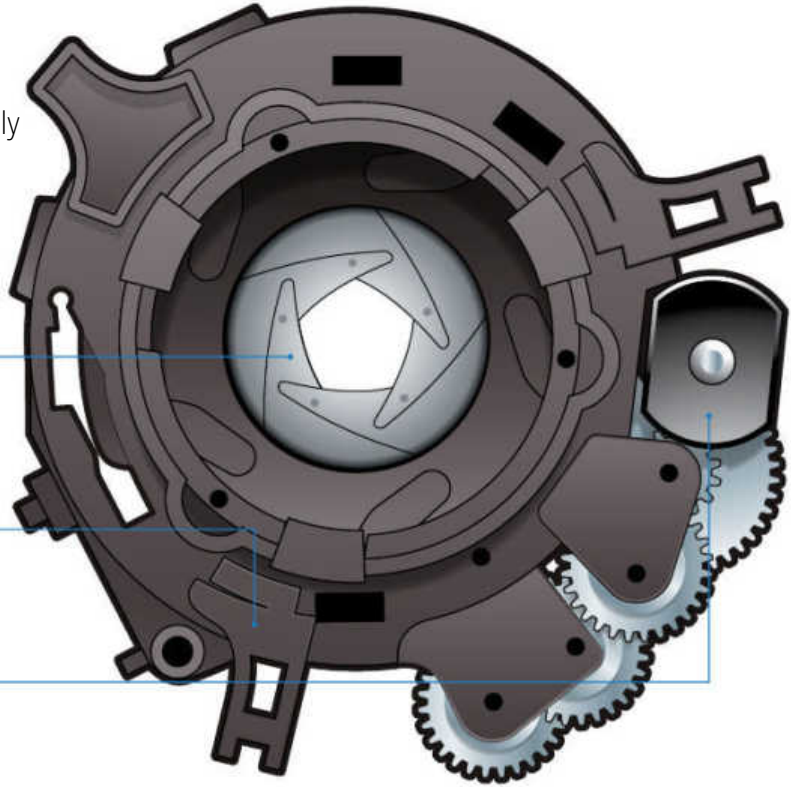
The aperture is created by a diaphragm formed by intersecting blades. These usually number between five and nine on any one lens

Lens component

The aperture assembly is located in the barrel of each lens you use, between the lens elements

Motor

This opens and closes the aperture when the shutter fires. It matches the f-stop set by you or the camera, and the focal length you're using



No matter what camera or exposure mode you use, there are just two main ways to regulate how much light reaches an image sensor. One is shutter speed and the other is aperture. These are key concepts that all photographers need to master. Aperture has an important effect on depth of field, which we explore later, but it can impact on the sharpness of your images in other ways, too. It's also

directly related to the working distance when you're using flash, and maximum aperture is an important factor in differentiating lenses. Yet the concept of aperture can be confusing. For example, it's described by irregular numbers such as f/2.8 and f/5.6. And in topsy-turvy fashion, big figures relate to small apertures and vice versa.

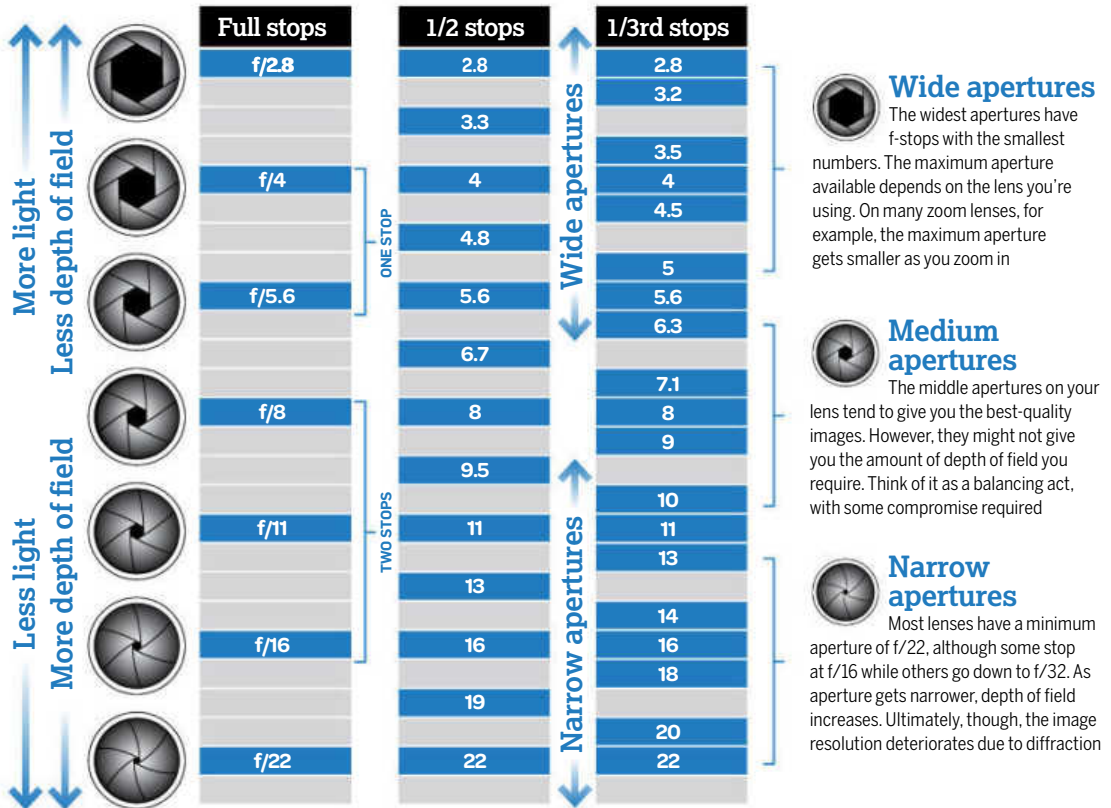
So what is aperture anyway? Well, it's not just a bit of jargon – the word means a hole, or

opening. More specifically, the aperture is an opening located within each lens. Its size is controlled by a diaphragm that performs in a similar way to the iris in your eye. Maximum aperture varies between lenses.

It's easy to understand that a small opening will admit less light than a big one. However, the idea can get confusing because of the system used to describe the aperture's size.

Making sense of f-stops

Your at-a-glance guide to aperture scales and what the numbers mean



The crucial point is that aperture numbers are fractions: $f/2$ means focal length (f) divided by 2. So on a 50mm lens, for example, $f/2$ means the diameter of the aperture is 25mm. On a 200mm lens at $f/2$, the aperture would be 100mm wide. This helps explain why bigger numbers refer to narrower apertures.

However, the amount of light that can pass through an aperture is proportional to the opening's area, not its diameter. If you halve the diameter (from $f/2$ to $f/4$, for example) the area decreases by a factor of four. It's the in-between setting of $f/2.8$ that gives half the area and half the amount of light. This is why the aperture scale

includes seemingly irregular numbers such as $f/2.8$ and $f/5.6$. In traditional photographic terminology, halving or doubling the amount of light is called a 'one-stop' change. We often refer to it as 1EV, or exposure value, but it means the same thing. It comes in useful when working out exposure compensation.

Aperture range

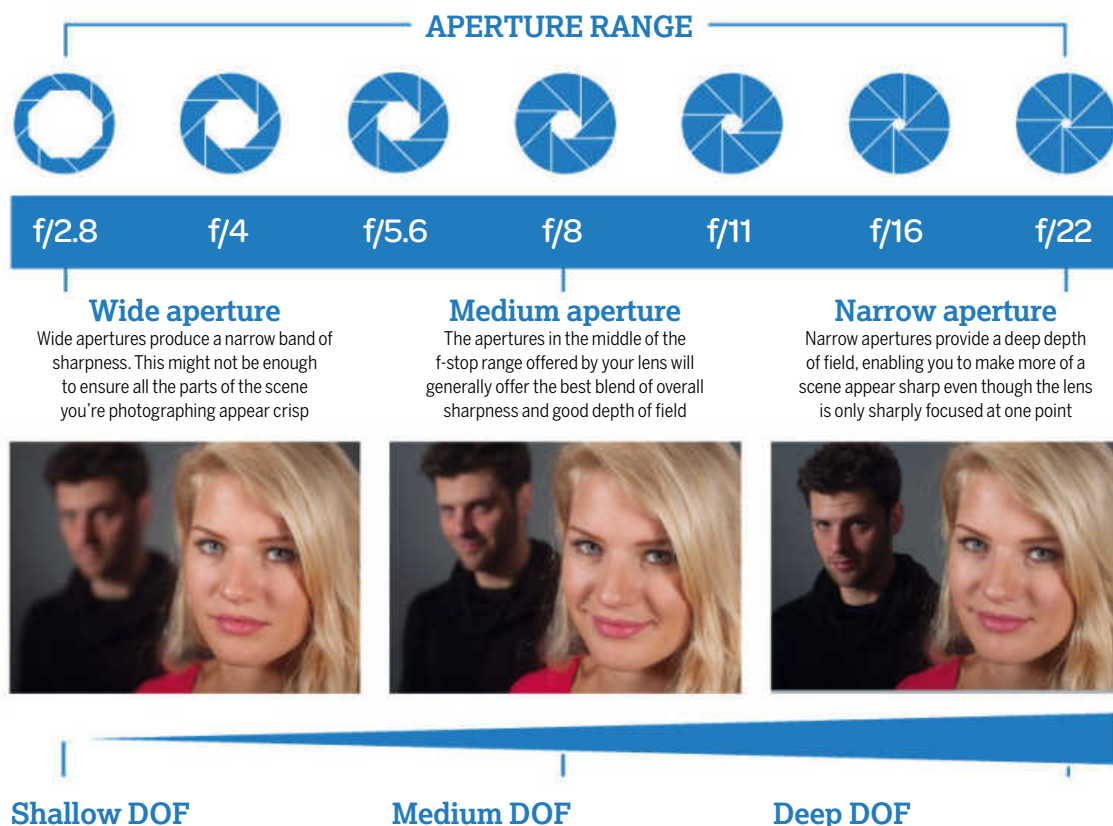
What apertures are on offer, and what happens when you move between them?

The majority of lenses use a standard scale of f-stops to indicate the size of the aperture, although the range of settings available varies depending on the lens being used. For instance, a 100mm macro lens typically offers an aperture range of f/2.8 to f/32, while a 28mm f/1.8 lens typically offers a range of f/1.8 to f/22. Each time the aperture is opened by one stop

(from f/11 to f/8, say), twice as much light is let in. The reverse is also true: close the aperture by one stop and half as much light makes it to the camera sensor.

There are two key reasons for changing the aperture. First, it ensures the sensor receives the right amount of light. If you're shooting in the dark, for example, or you want to be able to use a fast shutter speed to freeze a

fast-moving subject, then you may need to use a wider aperture to let in more light. If you're shooting in the daytime or you want to use a slow shutter speed for a creative blur effect, then you may need to use a narrower aperture. The other reason to change the aperture is to change the depth of field. Wide apertures create a shallow depth of field, whereas narrow apertures create a deep depth of field.

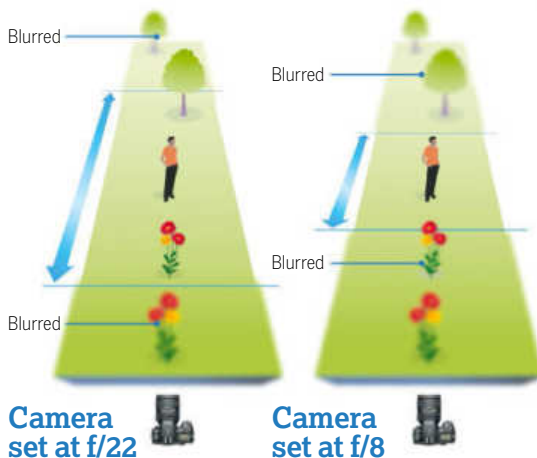


Depth of field

How the choice of aperture can affect the look of a picture

Depth of field is an important consideration when you take a photo. It's a measure of the extent to which the scene or subject looks sharp, and extends both in front of and beyond the point you've focused on. There are a number of factors that affect this, such as the distance at which the lens is focused and the combination of the focal length of the lens and the size of the sensor in the camera. However, the choice of aperture plays a significant role. In the examples here, the focus distance remains the same – somewhere in the middle distance – and it's the change of aperture that makes more or less of the image appear sharp. However, the closer you focus, the shallower the depth of field becomes. In macro photography, even narrow apertures may only produce a depth of field that's measured in millimetres. Conversely, the further you focus, the greater the depth of field. Focus far enough into a landscape, and it will be sharp using mid-range apertures. Normally, the image displayed in the viewfinder is at the lens's maximum aperture. This can make it impossible to judge the depth of field.

Narrow aperture Wide aperture

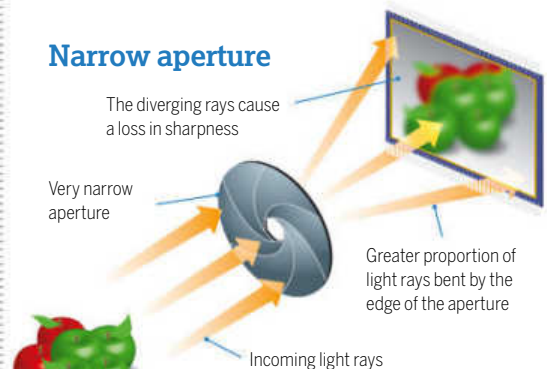


Diffraction

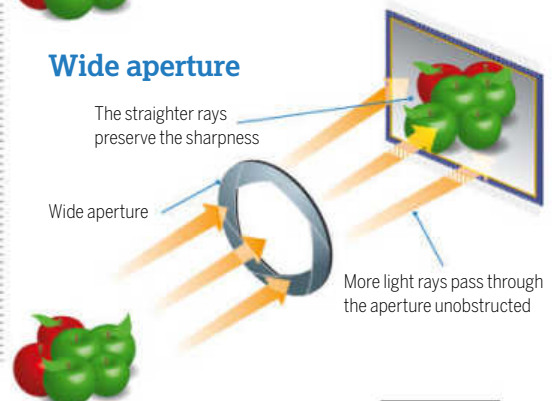
Why narrow apertures can lead to soft-looking shots

As light waves pass through the aperture, they are deflected by the hard edges of the diaphragm blades and spread out. This effect is called diffraction, and it occurs at all aperture settings. However, at narrow apertures the effect is more pronounced, and details in the image become progressively softer despite the lens being focused accurately. There comes a point where the depth-of-field gain that comes from using a very narrow aperture is cancelled out by the lack of overall sharpness. The precise aperture at which diffraction starts to become a problem varies according to the lens being used, but apertures beyond f/16 are generally best avoided if sharpness is crucial. The sweet spot is often somewhere in the middle, between f/8 and f/11.

Narrow aperture



Wide aperture



Shutter speed

Choosing the right shutter speed is the key to getting your shots sharp, but also to creating blur

When you press the shutter release button, there are a number of mechanical processes that have to happen before the light reaches the camera sensor and a picture is recorded. First, the mirror, which reflects the image into the viewfinder and allows you to focus and compose the shot, has to flip out of the way, which is why the viewfinder goes dark. Next, the shutter curtains, which prevent light from hitting the sensor, open and close...

Front shutter curtain

When the front curtain opens, the exposure begins. It's ended by the rear curtain moving back into place, followed by the first curtain

Light passing through the lens

Mirror

The mirror moves out of the way at the start of the exposure

Sensor

Rear shutter curtain

The rear curtain opens first, before the exposure begins, but the sensor is still blocked by the first curtain

Photographers work very hard to get their subjects perfectly sharp, and to create just the right degree of background blur in their images, but it's a mistake to imagine that focusing and lens aperture are the only controls that count. In fact the shutter speed plays an equally important part in controlling sharpness. The lens aperture can control the sharpness with depth, but the shutter speed does the same thing with an entirely

different dimension – time. If you're photographing an object that's still, the shutter speed may not be a factor, but most everyday subjects show some kind of movement, and this is where the shutter speed becomes important. When you're working out what shutter speed you need, many factors come into play, such as the speed your subject is travelling at, its distance, and the angle you're shooting from. For some subjects, such as a speeding race car, there may not be a shutter speed fast

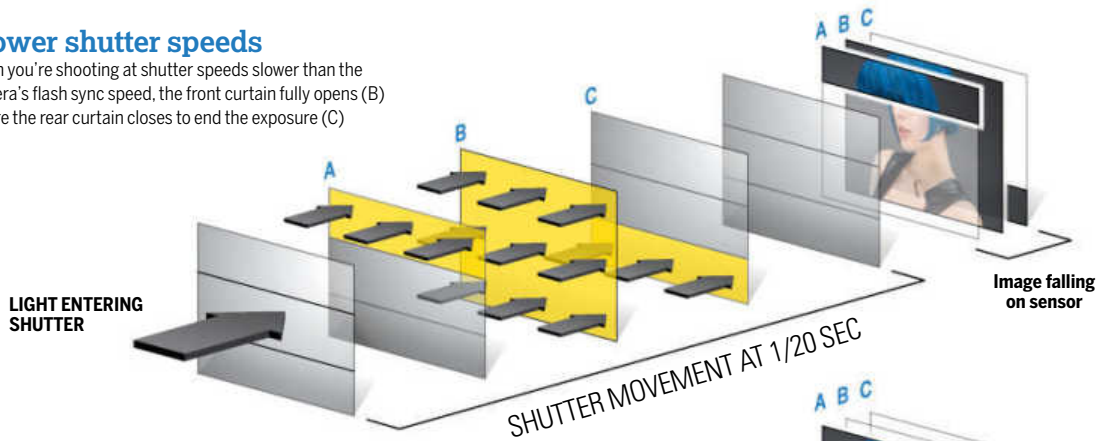
enough. That's why action photographers 'pan' with the subject to keep it centred in the frame. It's the subject's speed across the frame that causes the blur, not its speed in real life, and following your subject in the viewfinder is the secret to pin-sharp shots. When you take a panning shot, it's the background that comes out blurred, and this is just one example of a situation where you can use relative movement for creative effects. Waterfalls and seascapes are other classic examples.

HOW THE SHUTTER WORKS

Discover how shutter speed affects the build up of the image on the sensor

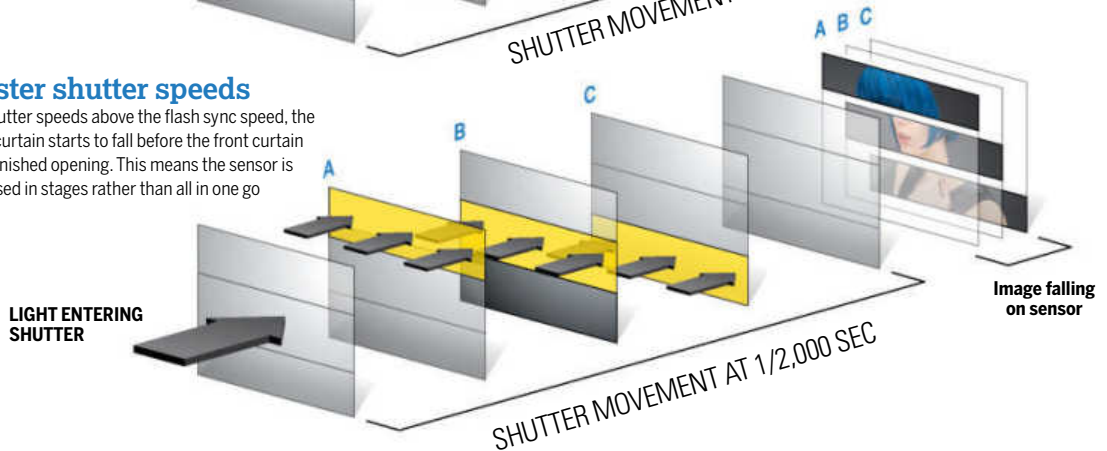
Slower shutter speeds

When you're shooting at shutter speeds slower than the camera's flash sync speed, the front curtain fully opens (B) before the rear curtain closes to end the exposure (C)



Faster shutter speeds

At shutter speeds above the flash sync speed, the rear curtain starts to fall before the front curtain has finished opening. This means the sensor is exposed in stages rather than all in one go



Digital SLRs use a pair of 'vertical-run focal plane' shutter curtains or blinds, positioned just in front of the sensor. These open and close to expose the sensor to light; the front blind opens to start the exposure, before the rear curtain drops down to end it. At slower shutter speeds, both curtains will be open for some of the exposure, but at faster shutter speeds, the rear curtain begins closing before the front

curtain has fully opened. This means that the sensor is effectively exposed through a moving slit, which can prove a problem when shooting with flash, because only part of the sensor will be exposed when the flash fires. This is why you need to consider the 'flash sync speed' when using flash: this is the fastest shutter speed at which the entire area of the sensor can be exposed at the same time (usually 1/200 sec or 1/250 sec). See our Creative Projects section for more about

the relationship between flash sync speed and shutter speed.

Using two shutter curtains ensures that exposures are consistent. Even though the top part of the sensor is exposed first as the front curtain opens, it's this area that's covered first by the rear curtain. If you see inconsistencies in exposure across a picture, this may be a sign that the shutter needs replacing. Over time, wear and tear takes its toll on this rapidly moving element.

PHOTOGRAPHING ACTION

Learn how to control your shutter speed, and understand how it affects the other camera settings



Blurred subject

Camera is stationary
Shutter speed is 1/100 sec



Result

Background is sharp
Moving subject is blurred

Frozen in time

Camera is stationary
Shutter speed is 1/2,000 sec



Result

Background is sharp
Moving subject is sharp

Tracking the subject

Camera is panned
Shutter speed is 1/100 sec



Result:

Background is blurred
Moving subject is sharp

Shutter priority is a good mode when you're shooting active subjects. It enables you to 'lock in' a suitable shutter speed and ensure you get sharp results. If the light changes, the camera will choose a different

aperture, and if you have Auto ISO selected, a different ISO setting. But what is a 'suitable' shutter speed? Too slow, and the subject will be blurred; too fast and you'll rob the image of any sense of speed. Often, a better option is to choose a slower

shutter speed, then use a panning technique. The trick here is to move the camera and track the subject, so it stays more or less in the same place within the frame, and is rendered sharply, while the fast-moving background is captured as a blur.

CAMERA SHAKE

How shutter speed can help you avoid the effects of wobbly cameras

When you're taking pictures without the support of a tripod, you need to consider the shutter speed, not just in terms of freezing subject movement, but also in terms of concealing the effects of camera shake. It's easy to neglect the shutter speed when you're shooting in aperture priority mode, but it can make the difference between a keeper and an image destined for the trash.

● Use the reciprocal of the focal length as a guide

– so if you're using a 500mm lens, aim for a minimum of 1/500 sec.

● If you've got a teleconverter attached to the lens, take this into account when working out the equivalent focal length. Do the same with a crop-sensor camera.

● You can get sharp results at slower shutter speeds using image stabilisation.



1/500 sec

1/30 sec

1/8 sec

HOW TO FREEZE A FAST-MOVING SUBJECT

It's not just the speed of your subject that counts, it's where you stand and the angle you shoot from, too



Heading straight at you

If you shoot your subject head-on there's no movement across the frame at all, only movement towards the camera, so a shutter speed two to three times slower is often possible. It becomes more of a focusing problem than a shutter speed issue – you need to get your camera's autofocus system set up correctly



Moving across the frame

This is where your subject's speed across the frame is highest. If you check our table below you'll see that a high shutter speed alone won't always be enough to get a sharp shot – you will need to pan with your subject too



45-degree angle

Your subject might be travelling at exactly the same speed as it was when seen side-on, but its speed across the frame will be halved. This means you can use a shutter speed half as fast to freeze its movement, and it will be easier to keep your subject centred in the frame. It's now moving towards the camera, though, so the autofocus will need to keep up

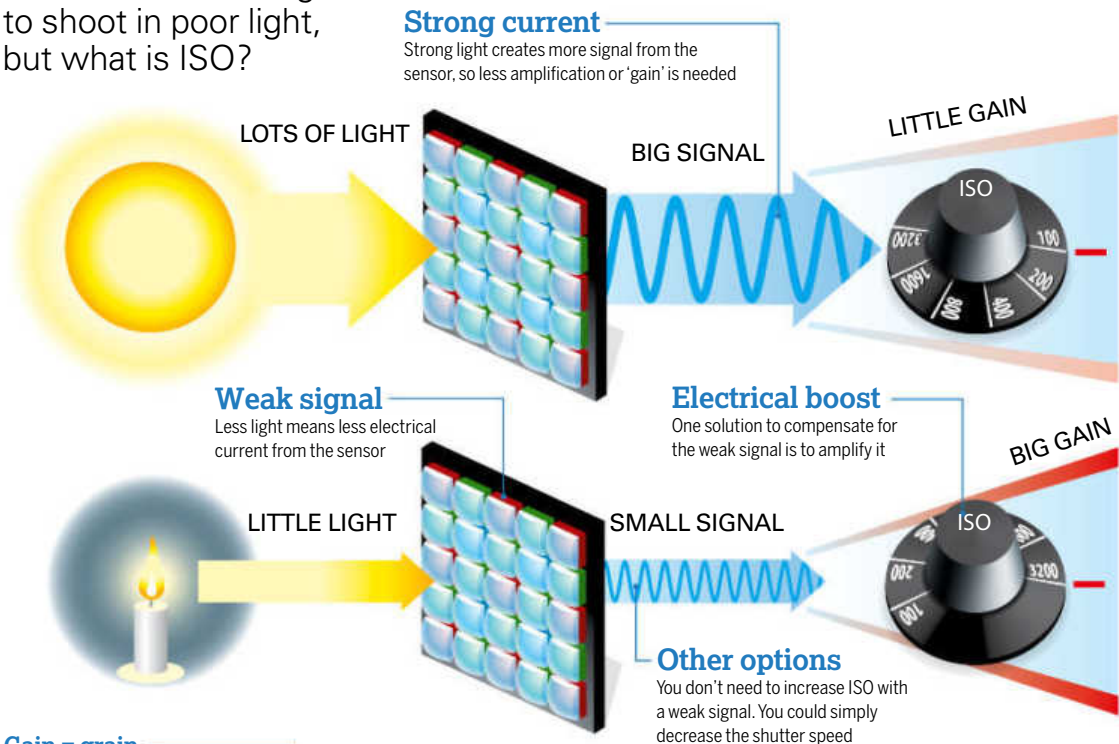
The key factor with moving subjects is their speed across the camera frame, not their speed in real life

Sharpness depends on just how far the subject moves during the time of the exposure. For a typical action subject such as a bike or car, you need the subject to have moved less than 2mm for a sharp shot, and less than 10mm for it to be any good

MPH	Metres per second	1/8000 sec	1/4000 sec	1/2000 sec	1/1000 sec	1/500 sec	1/250 sec
5	2	0.3mm	0.6mm	1.1mm	2.2mm	4.5mm	8.9mm
10	4	0.6mm	1.1mm	2.2mm	4.5mm	8.9mm	17.9mm
25	11	1.4mm	2.8mm	5.6mm	11.2mm	22.4mm	44.7mm
50	22	2.8mm	5.6mm	11.2mm	22.4mm	44.7mm	89.4mm
100	45	5.6mm	11.2mm	22.4mm	44.7mm	89.4mm	178.8mm
150	67	8.4mm	16.8mm	33.5mm	67.1mm	134.1mm	266.2mm

ISO sensitivity

You can use your camera's ISO setting to shoot in poor light, but what is ISO?



Gain = grain

The less the signal is amplified by the gain circuitry, the cleaner the picture will be, with less grain in the image



Low grain



High grain

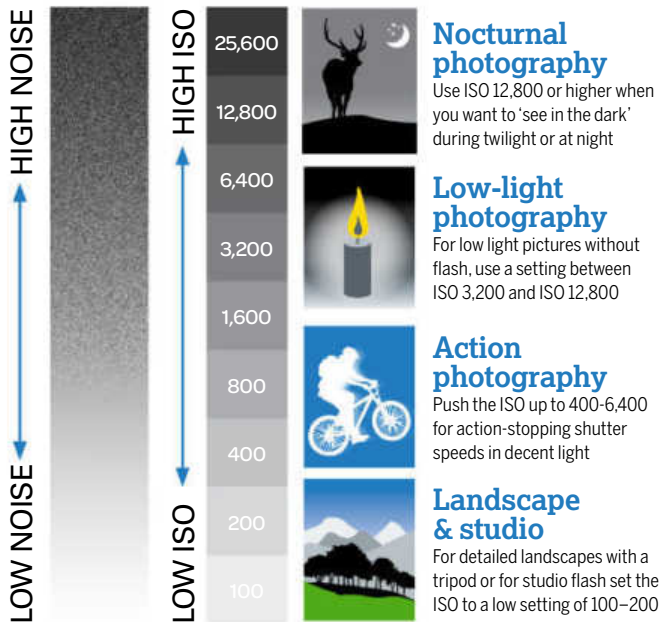
The ISO scale is used to measure the camera's sensitivity to light. Although the sensor cannot be changed to suit the subject (unlike film), its sensitivity can effectively be boosted by the camera's circuitry. This is done with the ISO control. The signal from the sensor is simply amplified, and this helps you get the fast enough shutter speed you want in low light. The ISO can be altered for each shot. This makes ISO a powerful tool for the photographer,

helping you to get sharp shots in a variety of lighting conditions.

The base sensitivity of D-SLRs varies according to the model – some start at ISO100, some at ISO200. Some cameras have an ISO button; you press and hold this while turning the main command dial to change the ISO setting. On others, you adjust the ISO using menus on the rear LCD display. Doubling the ISO number doubles the sensitivity of the sensor. So increasing the ISO from 100 to 200 means that, to get the same overall

ISO VALUES

Here's the typical standard range you'll find on your digital SLR



exposure, you can use a shutter speed half as long. Each doubling of the ISO also increases the sensitivity by a full exposure 'stop', or EV value, with the typical full-stop ISO scale going through 100, 200, 400, 800, 1,600 and so on. The top ISO setting varies depending on the age and cost of your D-SLR.

However, the top ISO settings, and sometimes the lowest, on many cameras are displayed as 'Hi' or 'Lo' values. This is because they don't conform strictly to the ISO standard but still offer an effective ISO increase. It's best to avoid using high ISOs where possible, because each time you increase the ISO setting, you get a small decrease in image quality.

Boosting the picture signal also amplifies random variations in the signal, known as 'noise'. This shows up as grain and colour mottling in the image, and gets more noticeable the higher the ISO setting. D-SLRs have noise reduction options, but the side-effect of these is some softening of the detail.

Some photographers resist increasing the ISO to get the most grain-free images, but pumping up the ISO often actually increases the image quality overall, as it lets you use a faster shutter speed, thereby eliminating any camera shake. A grainy picture is always better than a blurry one! A higher ISO can also enable you to use a narrower lens aperture.

GET SHARPER RESULTS

Boosting the ISO can help you to freeze movement and add depth

ISO 100, 1/125 sec at f/2.8



ISO 1,600, 1/2,000 sec at f/2.8



FAST ACTION

In this example, 1/125 sec is too slow to freeze the subject. However, by increasing the sensitivity by four stops from ISO 100 (200 – 400 – 800 – 1,600), a shutter speed four stops faster can be used. Note that the overall exposure level remains the same.

ISO 100, 1/20 sec at f/4



ISO 1,600, 1/20 sec at f/16

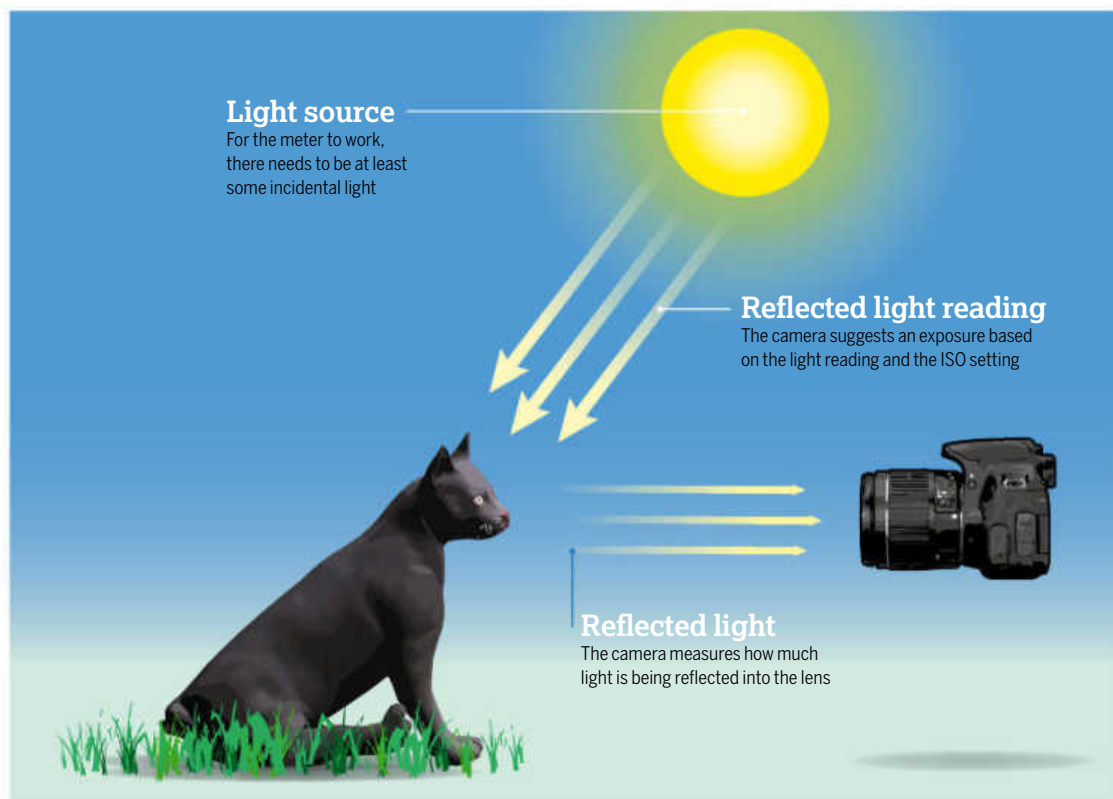


LANDSCAPES

Here, 1/20 sec gives a sharp handheld photo, but the wide aperture gives a shallow depth of field. Increasing the ISO by four stops enables an aperture four stops smaller to be used at the same shutter speed, providing a more extensive depth of field.

Metering

What are the matrix, centre-weighted and spot metering modes?



The camera meter measures a subject's brightness so that the camera can determine

how long the sensor needs to be exposed to record a picture. The problem is that the metering system doesn't always work flawlessly, and you may end up with pictures that are either too dark or too bright. For more refined results, you can correct these errors using exposure compensation, or dial in the exposure settings – aperture,

shutter speed and ISO – manually. Camera meters are calibrated to what's called '18% grey'. The theory is that a mid-tone grey, halfway between black and white, reflects 18% of the light falling on it. Point your camera at a grey card or a rough mid-tone equivalent, such as a field of grass or a pavement, and the camera will produce a well-exposed result. Obviously, not everything you photograph falls neatly into this mid-tone range. For instance, a swan in a snowy field

will reflect much more light, while a black cat in a coal cellar reflects much less. This is why photos of these subjects can look too dark or too bright: the metering system is trying to bring the overall exposure closer to mid-tone grey. The exposure for the swan will be decreased, so it comes out looking dull and grey, while the exposure for the black cat will be increased, so it comes out looking grey.

Digital cameras typically have three metering modes. The default

WHEN METERING GOES WRONG

Dark or light subjects can easily fox the system

The tonality of the subject being metered makes a big difference to the exposure reading. The camera meter is calibrated to target 18% reflectance – roughly the amount

of light reflected by a mid-tone subject – so anything that reflects significantly less or more light than this can cause problems with the metering system.

Dark subject



A dark subject in a dark scene reflects relatively little light



The camera sees a mid-tone subject receiving too little light



The camera incorrectly increases the exposure

Light subject



A light subject in a bright scene reflects much more light



The camera sees it as a mid-tone subject receiving too much light



The camera incorrectly reduces the exposure

Midtones



A neutral grey subject reflects about 18% of the light



This matches what the camera meter is calibrated for



As a result, the camera makes no adjustment to the exposure

'pattern' metering mode takes a range of readings across the entire picture, then calculates the optimum exposure according to the brightness of the scene or subject. Canon calls this mode Evaluative, while Nikon plumps for Matrix – but they effectively do the same thing. This metering mode

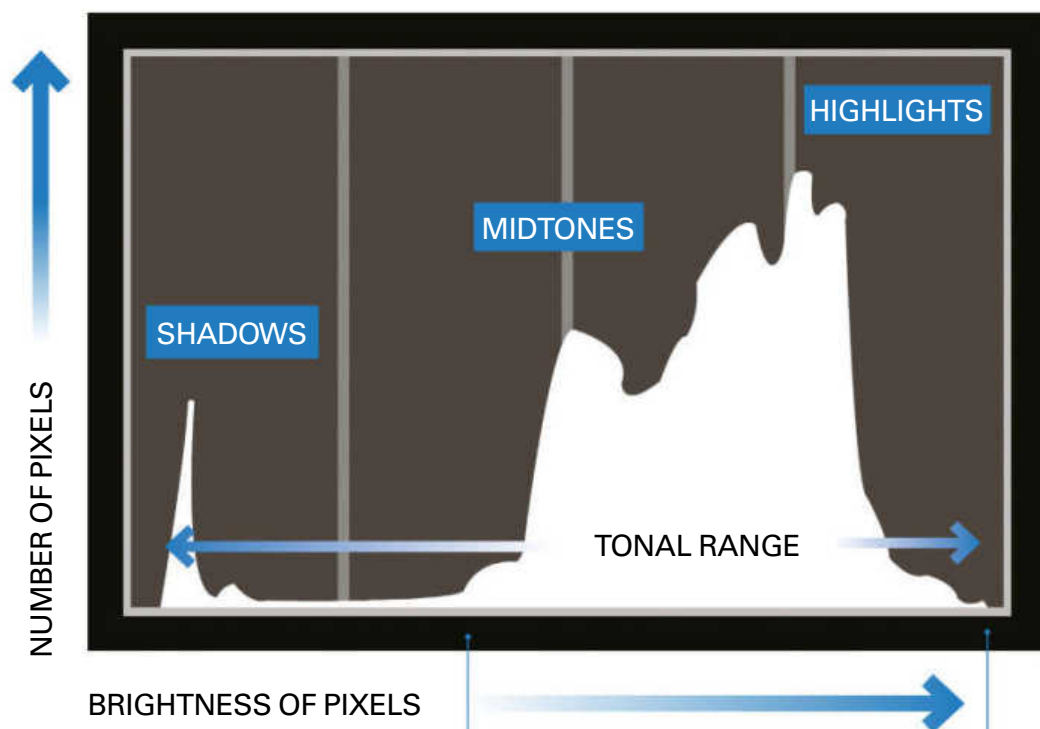
isn't a magic bullet: low light, bright or dark subjects or ones that are very small in the frame can still throw the metering out.

Your camera also comes with a centre-weighted metering mode. As the name suggests, this meters the whole scene, but gives priority to the centre of the frame.

Finally, there's spot-metering. This mode measures the brightness in a very small part of the frame. This is a great option when you want to lock the exposure on a small subject, or to take a number of readings from across a scene and then calculate the optimum exposure yourself.

The histogram

Discover how to interpret the chart on your SLR's LCD preview to get better exposures



Histogram

The shape and position of this black-and-white graph provides instant information about the exposure of the shot, and of the contrast of the scene

Dark to light

The graph plots the brightness of each pixel in the picture, from darkest on the left to brightest on the right. Vertical lines partition the graph into four segments, designed to make it easier to read

Histograms look like rather daunting technical graphs at first glance, but they are the most useful tool you have to help you capture the exposure you want, every time. And they are actually not nearly as daunting as they appear. The histogram is essentially a graph that illustrates

the range of tones in your image, from black on the far left to white on the far right with a mid-tone (18%) grey in the middle. As soon as you fire the shutter, a preview of your picture flashes up on the camera's LCD. You can instantly see if the shot is too bright or too dark, so it seems unnecessary to have a second, more scientific, way of judging the

suitability of your exposure settings. So why should you bother looking at the histogram?

First and foremost, displaying the histogram isn't a replacement for looking at the image itself when you evaluate a picture on your camera. Obviously, you need to assess the picture's composition, colour and tonal balance. But the qualitative

HOW TO MEASURE DYNAMIC RANGE

Use your measurements and this table to work out the best exposure



Measure the brightest area

Switch to manual shooting mode and select spot metering mode. Position the AF point over the brightest area.

Measure the darkest area

Adjust the shutter speed to centre the exposure bar, and make a note of the shutter speed. Do the same for the darkest area.



Check them on the chart

If the two readings are no more than 4EV apart (check the table on the right), choose a shutter speed right in the middle.

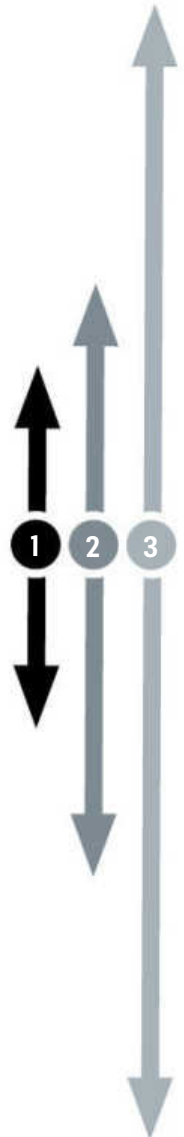
- 1 Less than four stops difference means you can afford to bias the exposure towards one or the other
- 2 Exactly four stops difference – you need to set a shutter speed exactly in the middle of the two you measured
- 3 More than four stops difference – shoot a series of exposures and combine them into one in software

nature of the preview image means it can be hard to see if an area of the shot is slightly too dark or slightly too bright. The histogram gives you this additional, and invaluable, information in a way that's easy to interpret at a glance.

Once you learn to read them, a histogram clearly shows the exposure of a shot, and whether you need to use exposure compensation to darken or lighten the exposure in

the next image you take. More importantly, it also tells you about the contrast in the scene. This enables you to avoid, or take special care with, subjects that have a greater dynamic range than your sensor can cope with. It also ensures that you get the best-quality results from your sensor when shooting low-contrast subjects. To get the right exposure in tricky scenes, you need to know the brightness range you're dealing with.

SHUTTER SPEED
1 sec
1/1.3 sec
1/1.6 sec
1/2 sec
1/2.5 sec
1/3 sec
1/4 sec
1/5 sec
1/6 sec
1/8 sec
1/10 sec
1/13 sec
1/15 sec
1/20 sec
1/25 sec
1/30 sec
1/40 sec
1/50 sec
1/60 sec
1/80 sec
1/100 sec
1/125 sec
1/160 sec
1/200 sec
1/250 sec
1/320 sec
1/400 sec
1/500 sec
1/640 sec
1/800 sec
1/1000 sec



The viewfinder

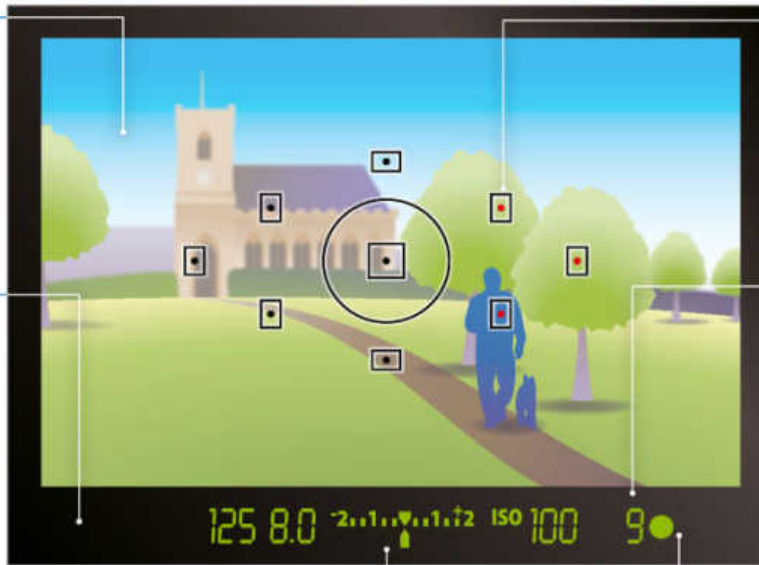
Your SLR's viewfinder provides lots of information about the photo you're about to take. Here's how to read it...

The image

Through the finder you can see the scene reflected by the mirror in front of the sensor

Symbols

The symbols on the left-hand side of the screen vary depending on what feature or button is engaged. For example, if you pop the flash, a lightning symbol will appear here. Note that some models of SLR switch the position of this symbol with the position of the focus confirmation light



Focus points

Your camera's focusing system is made up of a grid of focus points. The point or points of the image that are in focus light up

Number of shots

The number next to the focus indicator light indicates the total number of shots the camera can fire in a sequence. This will vary depending on how you have your camera set up

Exposure settings

In the middle of the screen, starting on the left is the shutter speed followed by the aperture. We then have the exposure compensation scale in the middle. When the needle is right in the centre of the scale, the camera considers the image to be well-exposed. To the right of this, the ISO sensitivity setting is displayed

Focus confirmation

A green circular LED will light up when the autofocus has locked on to a subject. It will blink if the AF cannot lock onto the subject, or if you are too close

Your SLR's optical viewfinder enables you to see through the lens you're going to use to take your photo. The light coming through the lens is reflected up into the viewfinder using a mirror, which you can see when you take the lens off your camera.

Normally, the image that you see in the viewfinder is shown with the lens at its maximum aperture,

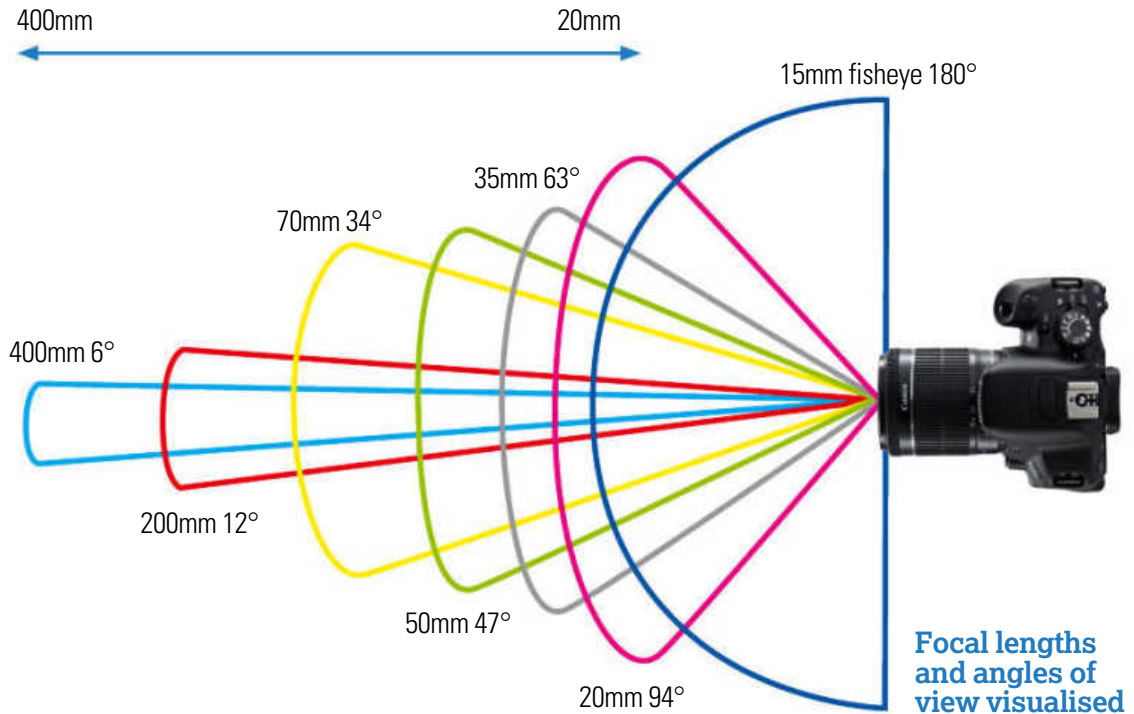
which means that it may not exactly match the appearance of your final shot. On many SLRs the viewfinder doesn't quite show you the whole of the frame, because there's an area around the edges of the image that isn't visible in the viewfinder. But because of the design and shape of an SLR, using the viewfinder with the camera held up to your eye is often a more stable way of holding the camera

than holding the camera to see the Live View screen.

The viewfinder gives you much more information than simply showing you what the camera is pointing at. On top of the image there's a display to indicate the area that the camera is going to focus on, and there's also a display along the bottom of the screen that gives you loads of information about the settings on the camera.

Angle of view

When framing, it's not just the focal length that matters. Here's how to choose the optimum lens to get it all in, or to get up close



Angle of view is the maximum view a camera is capable of 'seeing' through a lens, expressed in degrees. The choice of focal length is obviously key here, with longer lenses having a narrower angle of view than shorter lenses. For instance, a 200mm lens has an angle of view of 12 degrees, while a 20mm lens offers a wider angle of view of 94 degrees

on a full-frame camera. When it comes to zoom lenses, the angle of view changes according to the focal length the lens is zoomed at. However, the size of the imaging sensor inside the camera also affects the angle of view.

The angle of view can be measured horizontally, vertically and diagonally, but lens manufacturers often list just the diagonal, corner-to-corner angle

(as we've done above). Focal length and sensor size affect the maximum angle of view possible, and the angles of view illustrated here are for lenses attached to a full-frame camera. For cameras with smaller sensors, you need to take the sensor's crop factor into account, so for an APS-C sized sensor (called DX on Nikon cameras), you need to multiply the focal length by 1.5.

Additional lenses

The lens is the eye of your camera. We dissect one to show you what's inside

Lens aperture

This opening controls how much light is let in

Front element

The big piece of glass on the front collects the light – and is also the most exposed to dust and vulnerable to scratches

Zoom ring

When you turn the zoom ring, internal groups of lens elements move, changing the focal length



Vibration reduction (VR)

Image stabilisation technology uses gyroscopic sensors and a micro-computer to detect and compensate for lens vibrations caused by hand shake

Bayonet lens mount

This attaches the lens to your SLR. Contacts supply power from your camera to drive the autofocus and VR, and enable the camera and lens to communicate

Lens motor

Autofocus lenses have motors to move the elements. Silent Wave Motor (SWM) lenses are quiet and fast

Focal length

The focal length currently set is indicated by the number on the zoom ring that lines up with the central mark

A major benefit of a digital SLR is the availability of a variety of lenses suited to particular photographic situations. You may already know that 'long' lenses make distant subjects appear closer, or larger in the picture, while 'wide-angle' lenses take in more of the scene.

Specifying the focal length numerically makes it easier to compare different lenses.

Focal length is measured in millimetres. The range around 35-50mm is considered 'normal', or 'standard', because it roughly matches your field of vision. Wide-angle lenses have shorter focal lengths than this. Their wider view enables you to get more of a scene into your shot – good for big landscapes and tight spaces. Long (or 'telephoto') lenses –

70mm and upwards, say – excel at close-ups, portraits, and sports and wildlife photography.

Focal length is closely related to 'angle of view'. This directly describes how much or how little of the scene you can see in your SLR's viewfinder. The term 'wide-angle' is helpfully descriptive – these lenses have short focal lengths, such as 18mm. At the other end of the scale, we don't speak of 'narrow-angle' lenses, although it would be logical for long lenses such as 200mm.

However, to complicate things slightly, the angle of view in your viewfinder (and in the final picture) isn't solely determined by the focal length of the lens. This is because not all D-SLRs are alike – they have different-sized sensors. The sensor is the digital chip that captures

the image. In SLRs, it's one of two sizes. Most SLRs use smaller sensors (about 24x16mm), designated 'DX' or 'APS-C'. Pro models have larger 'FX', or 'full-frame', sensors (36x24mm). The larger sensor sees more of the image projected by the lens. This means that the same lens gives a wider angle of view on a full frame camera than on an APS-C model. In fact, focal length is effectively magnified by 1.5. We describe this as the 'crop factor'. With telephoto focal lengths, this brings you even closer to the action. For instance, it means that a 200mm lens has an effective focal length (EFL) of 300mm (200x1.5). This is often helpful for wildlife photography. Conversely, the crop factor reduces the 'wide-angle-ness' of wide-angle lenses. For example, an 18mm lens has an EFL of 27mm.



Maximum aperture key points

Not all lenses have constant, wide maximum apertures...

■ Lens aperture values follow a fixed sequence of values from f/16 to f/11 to f/8 and so on. Your SLR can also set intermediate values, which represent fractions of a stop.

■ Professional-quality lenses usually offer wider maximum apertures than cheaper 'consumer' lenses – even with lenses of the

same focal length. Professional zoom lenses also usually have constant maximum apertures throughout the zoom range. Obviously, they cost more too.

■ Cheaper 'consumer' zoom lenses will usually have a lower maximum aperture at full zoom than at the shortest length.

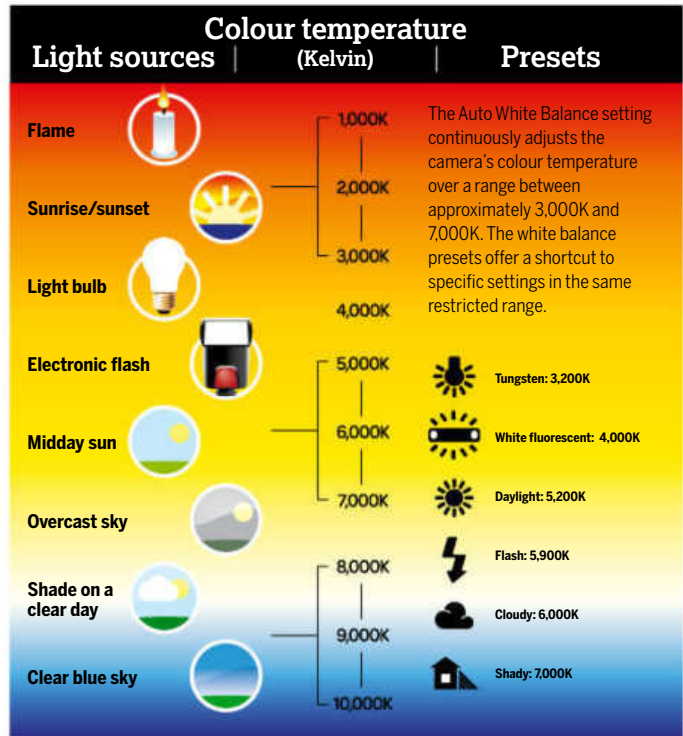


White balance

Learn how to remove colour casts from your pictures, or add them for creative effect

The white balance control enables you to adjust the 'colour temperature' of images. Light sources vary in colour temperature, which is measured in Kelvin (K). At one end of the Kelvin scale is the warm glow from a candle and at the other is the cool blue light seen in shadows on a sunny day. By adjusting the white balance, you can fine tune this colour temperature. It's called white balance because it enables you to ensure any whites in the image are rendered as 'pure' white. For instance, without a calibrated white balance setting, a sheet of white paper would appear orange when photographed under candlelight. White balance should really be called 'light balance', because the small icons you see when you scroll through your camera's white balance options all represent different lighting conditions. It's the job of the camera's white balance system to compensate for the colour differences in the lighting – so that the colours in the scene look exactly as we would expect them.

Your D-SLR has a wide range of options for controlling the white balance to suit the colour temperature of the light in the scene. However, your camera is supplied set to Automatic White Balance (AWB) – which will cleverly look after all this for you.



This AWB setting does a surprisingly good job of getting the colour of your shots right in most lighting situations. However, as with all your camera's automatic settings, it's not foolproof. Most importantly, it can only operate within a confined range of colour temperatures. Colour temperature is measured on the Kelvin (K) scale, and the AWB system can only adjust from around 3,000 to 7,000K. It will struggle to get a picture that doesn't look all-over

orange when shooting in your front room at night, or when photographing a floodlit building (as the colour temperature of these light sources is lower). It will similarly struggle just before dawn or on a foggy day, when the light is blue-toned and requires a colour temperature higher than 7,000K if you want to avoid blue-rinsed imagery. Your D-SLR, therefore, has a number of manual white balance options that allow you to take full control.

The colour wheel

Give your photos instant oomph by focusing on different colours and colour combinations in your compositions

Use warm shades with care

Cheerful yellows and oranges are classed as 'warm' colours. These have a big impact, and are best used in small doses. Tread with caution when using red – it has strong positive and negative connotations, signifying passion and love but also danger and sin. Blues evoke feelings of tranquillity

Primary colours

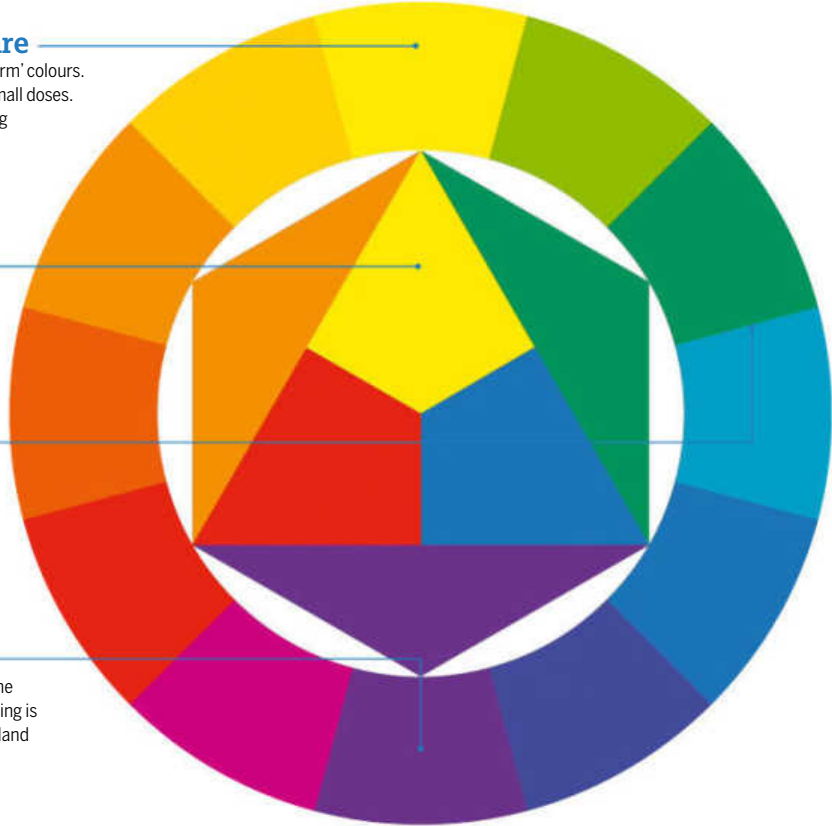
For a really strong effect try mixing primary colours (red, yellow and blue) to make a bright, bold statement

Restful hues

Matching together shades of 'cool' colours like blue and green creates an instantly calming effect. Or for instant contrast, mix a warm colour such as orange or red with a cool green or blue

Cultural Colours

Colour connotations vary around the world. In the western world, for example, the colour of mourning is black, but it's yellow in Egypt, and purple in Thailand



Most of us use colour in our photography without really thinking about it.

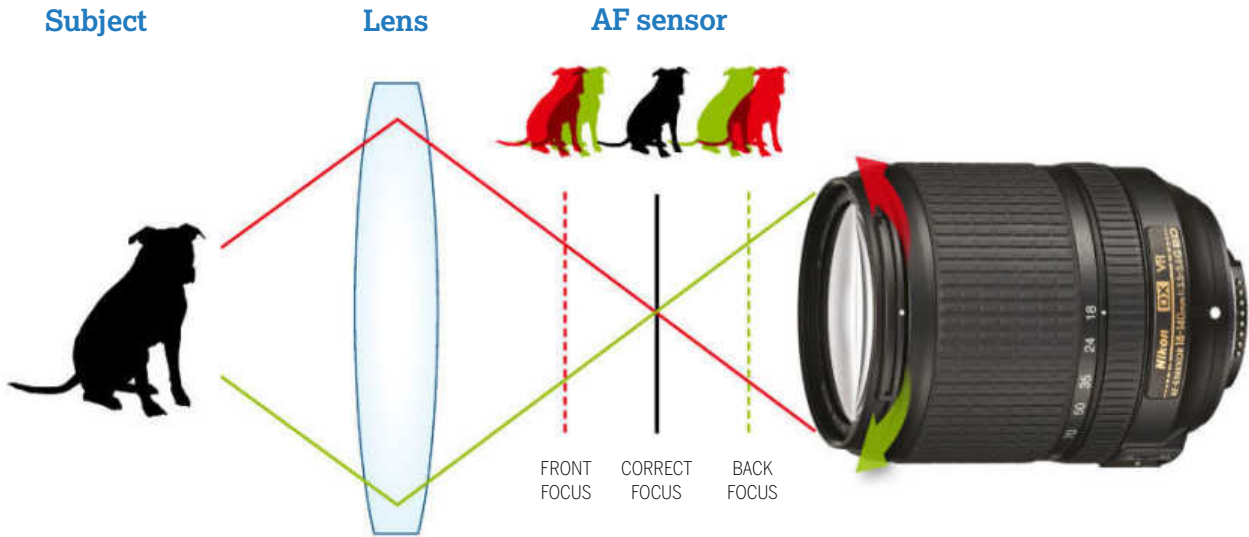
As soon as you stop and really consider which shades you use in your shots and how you match colours together, though, you'll see a drastic change in your photos. The most useful tool for experimenting with colours is the colour wheel. Used for centuries by

artists and designers, these rainbow circles show how different colours interact with each other. Primary colours (red, yellow and blue) are spaced evenly around the circle, with secondary colours (made by mixing primary colours together) falling in between. As a rule of thumb, colours that sit next to each other on the colour wheel work harmoniously together, and colours that are directly opposite each other are

complementary to each other. It's also worth keeping in mind when matching colours that different shades evoke strong psychological reactions in the viewer, and even small flashes of one colour can really change the mood and message of a photograph. Used correctly, colour is one of the easiest ways to create really dynamic, eye-catching shots. It's worth keeping a small colour wheel in your camera bag.

Autofocus

Everything you need to know about your camera's autofocus system, from how it works to how to use it



The phase detection autofocus sensor can detect how far out of focus a subject is, and whether the lens needs to focus nearer or further – it knows the correct adjustment before it focuses

Focusing is one of those tasks that sounds like it ought to be easy, but often it's not. In the old days, you simply turned the focus ring until the image looked sharp, or turned a ring on the lens to line up the index marker with a picture of some mountains, a group or a single person. But today's digital SLRs offer much higher levels of resolution, and the old techniques of guesswork and estimates aren't good enough any more. We want our photographs to be razor-sharp,

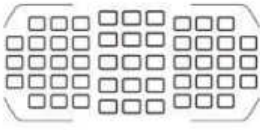
and for that we need the precision and speed of a modern multi-point autofocus system.

All these autofocus options can look daunting, but there's a simple way to look at them. First of all, you need to choose when your camera focuses – just once, when you half-press the shutter button, or all the time for as long as you keep the button pressed.

Second, you need to choose where in the frame it's focusing. Your camera offers you an array of choices, but you don't need to

know them all inside out. Once you've got the hang of what they do and why, you'll probably find you just use one mode for almost all your shots.

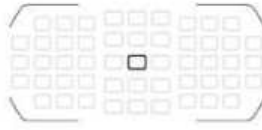
Your focusing options range from the clever and complicated Dynamic area AF modes to the perfectly straightforward single-point mode – choosing an autofocus mode is really only as complicated as you want to make it. See the diagrams on the right for detailed descriptions of the modes available to you.



Auto Area AF

Best for snapshots

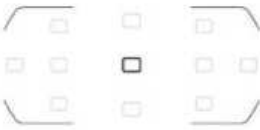
In Auto Area AF mode, you're leaving it to the camera to decide what to focus on. It will check all its focus points and choose either the object nearest to the camera or, on later cameras, any faces the camera detects in the scene. This mode is a good fallback for novices, but the camera will sometimes focus on the wrong thing.



Single-point AF (51 points)

Best for precision

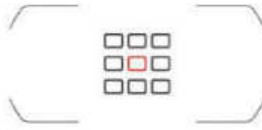
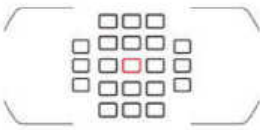
In single-point AF mode, you pick the focus point yourself. This gives the most control, provided you've got time to select the correct point (or you could use the 'focus lock' method). Single-point AF is ideal for relatively static shots where you've got a little more time to get set up.



Single-point AF (11 points)

Best for everyday

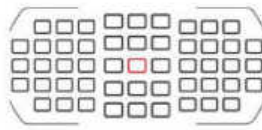
If you have a camera with a large number of AF points, you have a sophisticated autofocus system at your disposal, but it can take too long to select between them. On cameras with 39-point or 51-point AF systems, you can restrict the number of AF points to 11 for quick manual focus point selection.



Dynamic area AF (nine points)

Best for action

Dynamic area AF mode is designed to make the autofocus system more responsive and more reliable for moving subjects. You still select the focus point manually, but the surrounding AF points act as backups to keep the subject in focus if it moves briefly away from your chosen AF point.



Dynamic area AF (21 points)

Best for erratic action

You can include more AF points in Dynamic area AF mode. Nine points offers greatest accuracy if you can follow your subject in the viewfinder, but for subjects that move more erratically, the 21-point option may be more effective. Try out the options to see which best suits your subjects.

Dynamic area AF (51 points)

Best for tracking

You can use all the camera's focus points in Dynamic area AF mode. Some models offer 3D tracking, which uses information from multiple AF points to predict your subject's movement. This suits shots where you want to keep the camera framing the same while shooting a moving subject.

FOCUS MODES

What happens when you half-press the shutter button?

AF-S: SINGLE-SHOT MODE

This is the best mode for everyday photography. You half-press the shutter button (2) to activate the autofocus, the camera focuses once and then holds this focus until you press the button the rest of the way to take the picture or until you release your finger.

AF-C: CONTINUOUS AF MODE

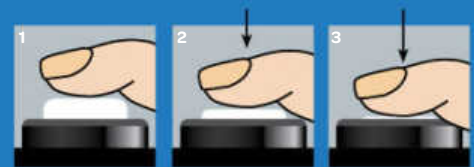
This is the best mode for sports and action photography. As soon as you half-press the shutter button (2) the autofocus is activated, but it stays active all the time until you release the button or take the picture.

AF-A: AUTO MODE

AF-A mode will automatically switch between single-shot or continuous modes, depending on whether the camera detects subject movement. It's a reasonable fall-back for novice users, but it can be unpredictable and it's usually better to choose the mode yourself according to what you're shooting – this is the best way to make sure the camera is going to react predictably.

AF-ON BUTTON: 'BACK-BUTTON FOCUSING'

Pro D-SLRs have an 'AF-On' button on the back. This takes over the AF from the shutter release – it's a technique that sounds odd but makes sense when you try it. You can use it for single-shot AF, but it's more often used for moving subjects in continuous AF mode.



FOCUS
Press halfway

SHOOT
Press all the way

Hyperfocal focusing

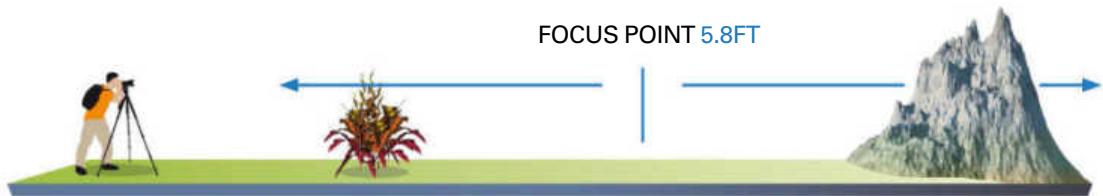
Discover how to calculate the best distance to focus at in your outdoor photos



A Focusing on the foreground



B Focusing at infinity



C Focusing at the hyperfocal distance

Hyperfocal focusing is an old-school technique that helps you maximise sharpness in a photo. A camera lens can only focus to a single distance at any one time, but there's an area that extends from that point, both towards the camera and towards the horizon, where things still look sharp. This area is known as the depth of field. The depth of field isn't a fixed distance: several factors can make it wider or narrower, including the lens's

focal length and the aperture you set. The distance to which the lens is focused makes a big difference, which is where hyperfocal focusing can help. The hyperfocal distance is the point at which everything from half of this distance through to infinity falls within the depth of field, and so looks acceptably sharp. Shorter focal lengths and narrower apertures bring the hyperfocal distance closer to the camera, increasing the depth of field as a result. Longer focal lengths and wider apertures have the opposite effect, pushing the hyperfocal

distance back and decreasing the depth of field. Typically, the depth of field doesn't stretch as far towards the camera from the focal point as it does towards the background. Only about one third falls in front. This means that if you focus on an object close to the camera, you'll essentially waste one third of the depth of field. To fix this, you could focus further away, to sharpen more of the background but still ensure the foreground object falls within the depth of field. This is the theory behind hyperfocal focusing.

Digital processing

Your digital SLR might look like a film camera, but inside is the equivalent of a digital processing lab

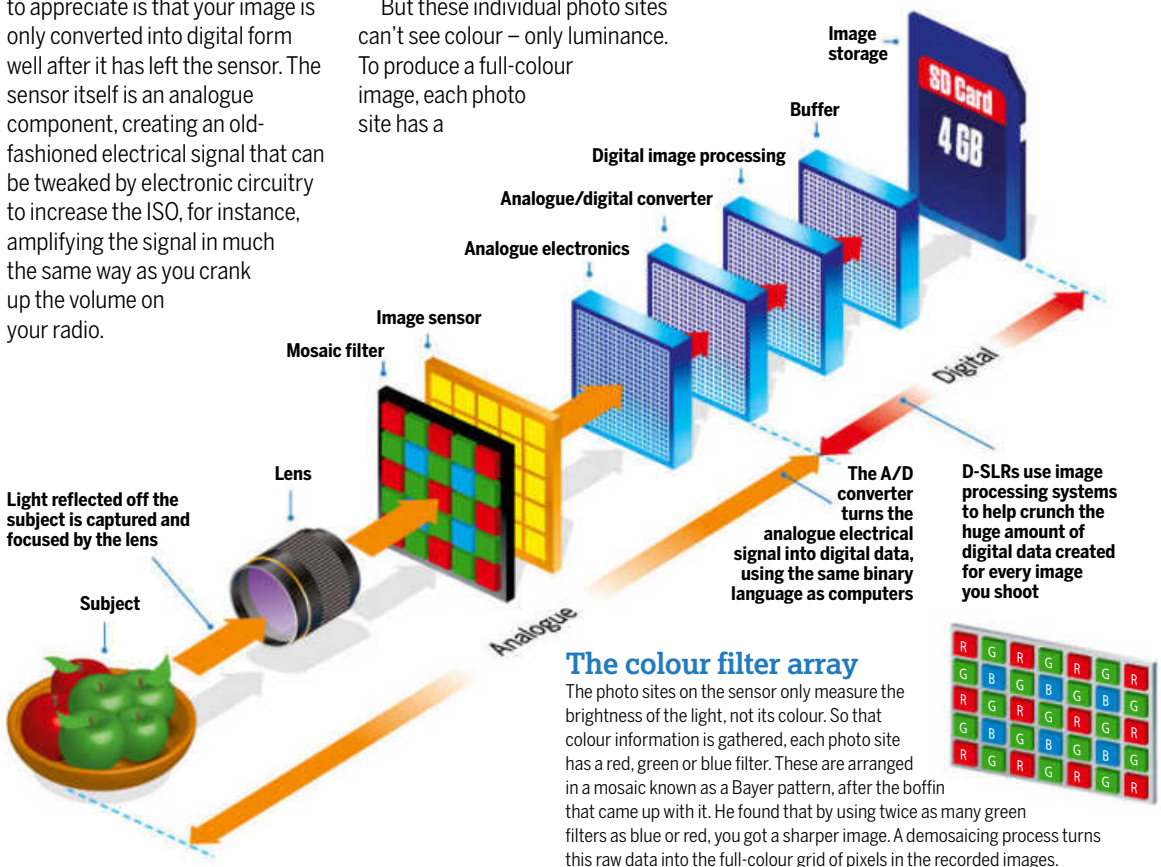
Your digital camera does a lot more work to turn what you see in the viewfinder into a

finished image than you probably give it credit for. Understanding a little of what goes on deep inside your camera's circuitry will help you understand some of the many options that you have to play with. Perhaps the most important thing to appreciate is that your image is only converted into digital form well after it has left the sensor. The sensor itself is an analogue component, creating an old-fashioned electrical signal that can be tweaked by electronic circuitry to increase the ISO, for instance, amplifying the signal in much the same way as you crank up the volume on your radio.

The sensor is made up of millions of light-sensitive units, often referred to as pixels, but more accurately called photo sites. These can measure as little as 0.004mm across (around 1/16th of the width of a single human hair). Each one creates its own electrical signal in proportion to the brightness of the part of the image that it covers.

But these individual photo sites can't see colour – only luminance. To produce a full-colour image, each photo site has a

miniature coloured filter, either red, green or blue. A pixel with a green filter will only see colours that have some green light in them. But as practically all colours can be made by mixing red, green and blue light together, this still provides valuable information. The clever bit is how the pixels work together to assign colours.



Flashgun

Where that intense burst of light comes from

Diffuser screen

A translucent plastic screen in front of the tube is designed to spread the light so that the coverage is as even as it can make it

Flash tube

A glass tube filled with xenon gas, which the high voltage charge passes through to create the flash. An electrical coil around the tube excites the gas particles to help the process

Reflector

A silvered surface ensures that as much light as possible is directed towards the subject

Capacitor

A reservoir of electrical charge. A transformer increases the voltage from the batteries to the 300 volts needed by the flash tube

There's a time and a place for flash. It will often kill the atmosphere at a party, but there are other times when

it's the essential ingredient for a successful shot. The secret to success is to use the built-in flash on most SLRs with caution. The key to getting good results is often a matter of exposure, ensuring you use settings that make the flash look as natural as possible. Using flash complicates the usual problems of exposure. You not only have to choose the shutter speed, aperture and ISO to suit the scene, you have to add the flash power into the exposure equation too. A flashgun provides a brief burst of light – but the duration can be varied to alter how much flash 'power' is added to the scene. The amount of power needed will depend on the aperture used (the wider the f/stop setting, the less power required) and how far away they are. The power of the flash falls away with distance.

The maximum power varies – the built-in flash has much less power than add-on units – but once the subject is more than a few paces away, flash has little effect. If your subject is within range, you can leave the camera to set the flash exposure automatically, or switch the flash to manual mode (if available) and work it out for yourself using the camera's Guide Number. You take the distance to your subject and divide this into the Guide Number to get the lens aperture you need for the correct flash exposure.

The ISO setting is also a factor – the higher the sensor sensitivity, the less flash power is required. More power means you can shoot at greater distances, too. The shutter speed is often not a significant factor in the flash exposure calculation, although the shutter speed matters for other reasons. The 'focal plane' shutter of your camera works in a way that

means that you can't use the full shutter speed

range – ordinary flash won't work with speeds faster than the maximum 'sync speed' for your camera. If you're using the built-in flash or a dedicated external flash, most of the factors that need to be considered when calculating flash exposure are handled by the camera. Inevitably, automatic flash will not always give the results that you want. It's possible to switch the flash to manual mode, then choose the power you need to suit the subject distance or the aperture setting. You can choose ½ power, ¼ power and so on – the power is adjusted in the same 'halving' and 'doubling' steps as regular exposure settings. Some of the time, though, it's best to leave the flash set to auto.

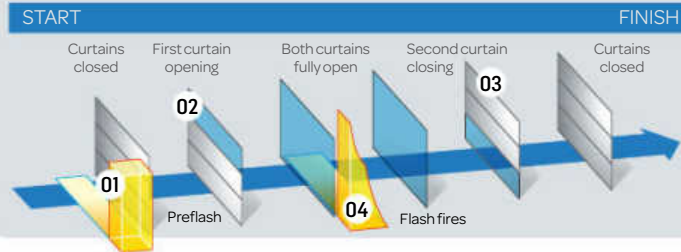


Split-second timing

The shutter speed and flash mode define the flash timing

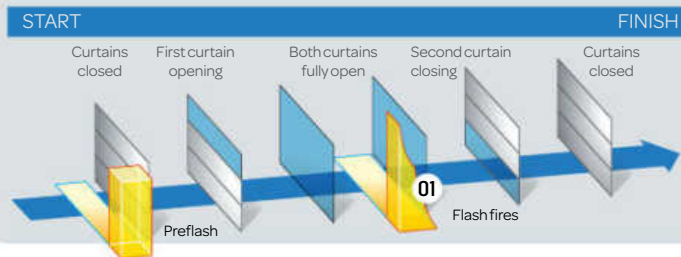
01 First curtain sync flash

The flash briefly pulses before the shutter fires (01) to set the flash exposure. The shutter is made up of two metallic 'curtains' (02 & 03). As soon as the first is open and the sensor is fully uncovered, the flash fires (04). At the end of the exposure the second curtain closes.



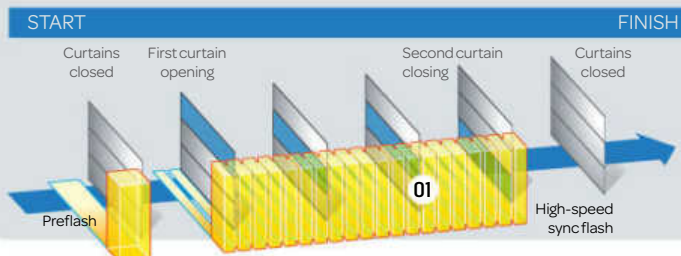
02 Second curtain sync flash

If the camera or flash is set to second-curtain sync, the flash will fire at the end of the exposure (01) where the shutter blinds are fully open – rather than at the beginning of this exposure. This is useful with moving subjects, and with slower-than-usual shutter speeds.



03 High-speed sync flash

At shutter speeds above the SLR's normal 'sync speed', the shutter is never fully open and the exposure is therefore made by a moving slit, created by the two shutter curtains. In high-speed mode, the flash continually fires, or 'pulses', throughout the exposure (01).



Guide numbers explained

CAMERA

SUBJECT



1 Guide number
(see your manual) **2 Lens aperture** **3 Distance**

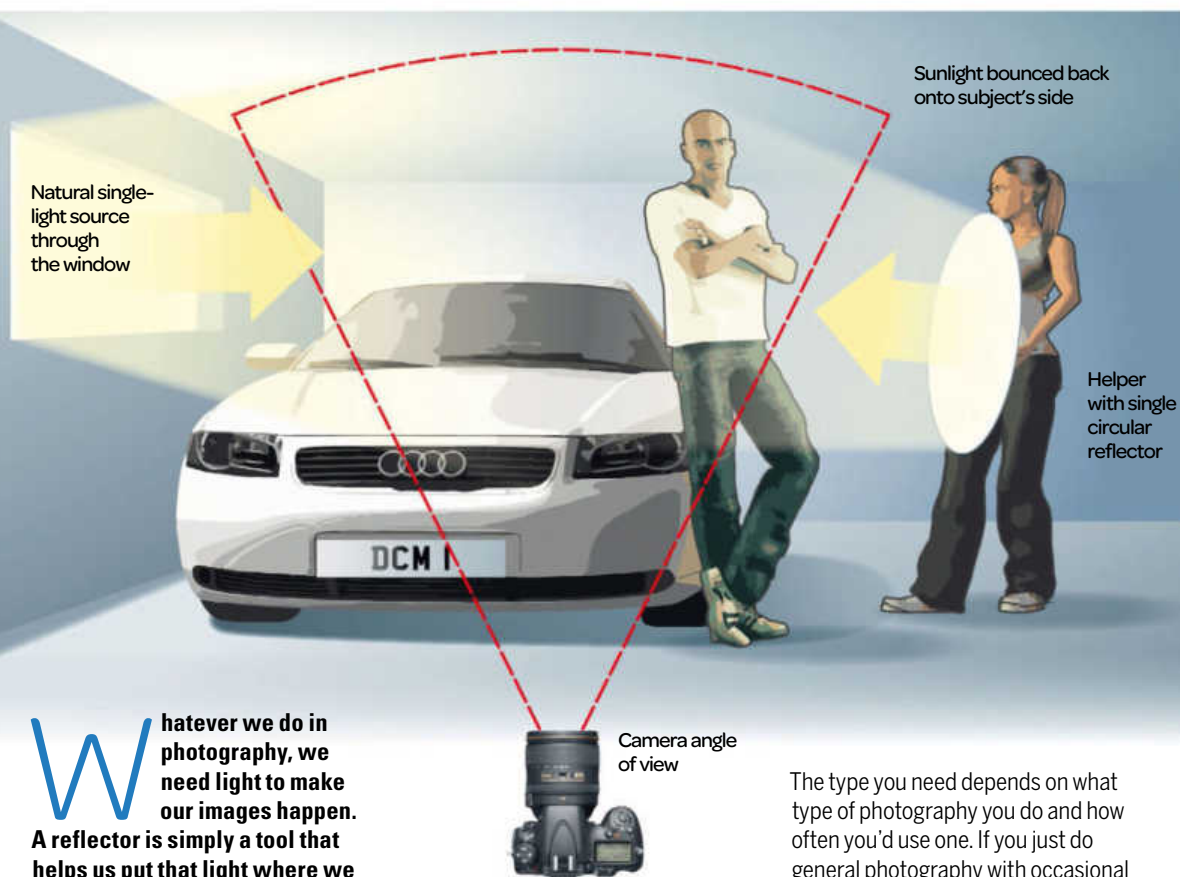
The guide number indicates a flashgun's maximum power output, and helps you work out manual flash exposures. You do this by dividing the subject distance (in metres) into the guide number:

Aperture = guide number / subject distance

For example, if your flash has a guide number of 12 and your subject is 2m away, the correct aperture would be $12/2$, or $f/6$. The guide number is dependent on the ISO – at higher ISOs the flash power, and hence the guide number, increases. Guide numbers are usually quoted at ISO100, although on some cameras it's ISO200. Modern flash systems use automatic exposure measurements, and control the flash duration in a way that makes manual calculations largely obsolete, although guide numbers are still useful for comparing the power of flashguns.

Reflector

Bounce light where it's needed with one of these...



Whatever we do in photography, we need light to make our images happen. A reflector is simply a tool that helps us put that light where we want it. A reflector allows you to bounce available light – whether natural or artificial – back towards your subject, so you can change the way the light illuminates it. Reflectors come in various shapes and sizes, although the most common shapes are circular and rectangular. They are made from reflective material, usually in white, silver or gold for different effects. Some have handles or can be folded

together for easy storage, while others are large and difficult to handle. You can even make your own reflector from white card. All photographers should have at least one reflector at their disposal, even if it's just a small one. In certain circumstances it will come to your rescue and make a big difference to the quality of an image. When you see the difference they can make, you'll be instantly convinced.

The type you need depends on what type of photography you do and how often you'd use one. If you just do general photography with occasional portraits, then a small circular pop-up reflector that has both silver and white sides may be the best option. You can get these with different covers so that you have a choice of white, silver and gold. Our favourite is a 32-inch diameter circular reflector that folds down small enough to slip into the side of a camera bag. Larger reflectors will generally give you a better spread of softer light, but aren't so easy to carry or handle.

Which colour do you need?

All reflectors work in the same way, but the colours make a difference in your shots

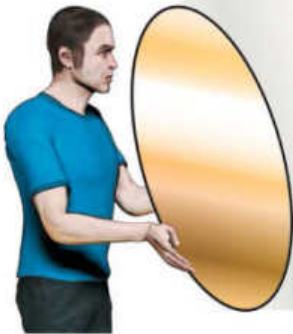


Silver reflector

A silver reflector reflects a large amount of light. It's best to use these at some distance if you're working in the studio otherwise the light can look too harsh. If you want to make your own, silver foil works a treat. However, they're not too expensive and most reflectors come with several covers, such as white, silver and gold, so getting one is a good investment.



Silver reflector

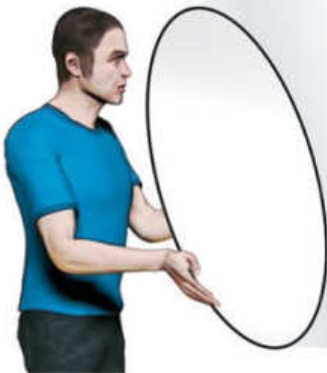


Gold reflector

Gold is best avoided with studio flashlights, which are usually balanced to daylight, because the warm glow that it radiates is likely to create mixed lighting in your final images. This will only mean more work in the digital darkroom later on. If you're working outside, using a gold cover warms skintones up beautifully.



Gold reflector



White reflector

A white reflector is ideal when working in the studio because it creates a softer, colour-neutral fill light. You don't have to use a specially-made reflector, a large piece of white card can be just as effective. Professional studios often use huge sheets of white foamboard. While they're not that expensive, they take up a lot of space.



White reflector

Studio photography

Discover how to set up a simple home studio and get professional-looking results

Backdrop

Most backdrops come in the form of a roll of paper. They're available in a variety of sizes and colours. You'll need support stands and a pole to keep the backdrop in place. If you don't have one, try a large sheet or piece of fabric. Black velvet is a great choice, it has light-absorbing qualities and gives a nice rich black

Hair light

The hair light is positioned behind the model with a snoot attached. The snoot concentrates the light, and here we've got it pointing at the hair. Not only does this light the hair, it creates a separation from the background

Main light

Use this with a diffuser, like a softbox. A softbox softens the light so the shadows are less harsh, and gives window-shaped catchlights in the eyes. The angle, height and distance of the main light are vital to getting the look you want. The power of the flash is controlled using buttons on the flash head

Model

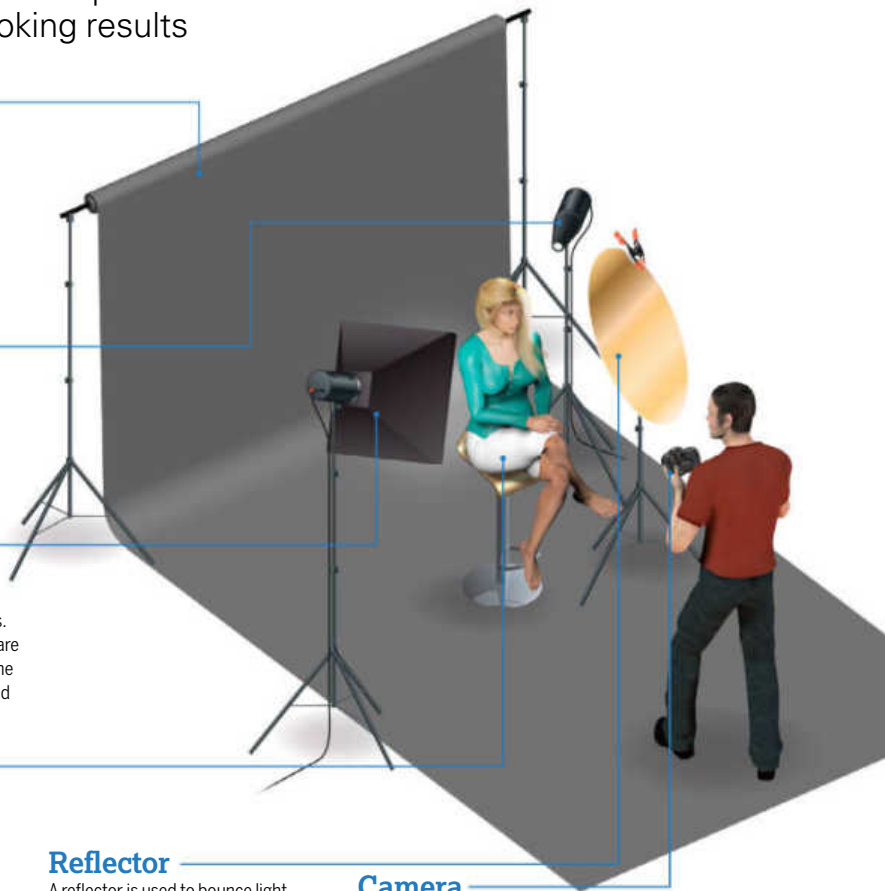
If you don't have a friend or family member you want to photograph, you can often find willing models via networking websites such as www.modelmayhem.com and www.purpleport.com. New models are keen to build their portfolios and increase their experience, so you can usually come to mutually agreeable arrangements – for a small fee or trading their time in exchange for use of your photos.

Reflector

A reflector is used to bounce light back from the main light into the shaded side of the subject's face. This ensures the shadow is still there to define the shape of the face.

Camera

You'll need to connect your camera to the studio lights. This can be done through a sync cable (if your SLR has a PC socket) or with wireless triggers. You're best off switching to manual shooting mode.



There's a lot of complicated sounding equipment that comes with studio photography, but don't get too bogged down with this. Our basic studio set-up above shows you

the essential items that you'll actually need. And all of it can be packed away into a small bag. When you're working with two lights, a reflector is still surprisingly useful because it will effectively act as a third light. It can

be used to bounce one of the existing lights back at the subject. If you're working outside with natural light, a reflector is extremely handy. Reflectors come in many shapes and sizes, and different colours and surfaces will

Flash head 1

Studio flash heads are much more powerful than Speedlights or other on-camera flashguns. They're powered either directly from the mains or by portable, rechargeable battery packs for location work

Lighting stands

You'll need stands for your flash units – they are included in most kits. You can adjust the angle of the flash with a locking knob near the top, and to change the direction, you just pick up the stand and turn it

Flash head 2

Most kits come with two flash heads: the first provides the main illumination and the second is used to provide fill-in light, background lighting or other more sophisticated lighting effects

Umbrella

This is another lighting 'modifier', and you should check to see what you get with any lighting kit you're considering. Some come with two umbrellas, others like this might come with a brolly and a softbox

Height adjustment

Precise positioning is at the heart of any studio lighting setup, and studio lighting stands are designed to make height adjustments quick and simple using tripod-style locking clamps.

Softbox

This is one of the more common light 'modifiers' you can use with studio flash units – you can see more examples in the Flash Modifiers box, right. This is what makes studio flash so powerful and versatile

FLASH MODIFIERS

These change and control the quality of the light



Softbox

A softbox produces a large, soft and uniform area of light that works well for portraits and still lifes



Honeycomb

This focuses the beam from the flash more tightly, and helps prevent light 'spillage' into other areas



Snoot

A snoots produces a very tightly focused beam of light that illuminates a small area for dramatic effect



White umbrella

You fire the flash through the umbrella for a soft light source, although there is some spillage



Silvered Umbrella

You fire the flash into the brolly to bounce it back towards your subject for a broad but crisp light

have different effects on a subject. Just like the studio lights, the height, angle and distance at which a reflector is positioned will all have an impact on the end result. Using nothing more than a simple two-head home studio lighting kit

you'll be able to create several studio set ups, from a classic Rembrandt to a more contemporary clamshell arrangement. These easy-to-arrange strobe combinations will enable you to take complete

control of lighting so you can go into a studio shoot with confidence. See the Creative Projects for more information on how reflectors work, and on the effects on the model of the different colours available.

LIGHT POSITIONS

Choose where you want the shadows to fall



High

In most cases you'll want to have your main light positioned above the model. Notice how the shadow from the nose falls down the face, elongating the features. Ideally, you want the shadow of the nose to point towards the end of the lips. The triangle of light on the cheek on the shadow side is often referred to as 'Rembrandt' lighting; get your model to move her head to achieve this.

Eye level

With the flashlight to the side and at the same height as the model, the light falls across the face, causing a shadow that widens the features. If this light is balanced with one of equal strength on the other side, it can be quite effective, but as a sculpting technique, height would be better. Keep your flashlight's modelling lights switched on so you can see how the shadows will lie.

Low

There are unlikely to be too many situations when a low light is going to work well as your primary light source. It gives a spooky look, so Halloween is probably the only time you're even going to think about using this technique. As you can see from our example, it's not very flattering even on a young model. With underlighting, the nose shadow is clumpy and bags under the eyes will be amplified.

CAMERA HEIGHT

It's not just your subject that needs to know where to stand



High

Positioning your camera slightly higher than the subject's eyes can often produce a more flattering image. It generally creates a slimming effect. Notice how the neck recedes and the jaw looks more defined. But don't go over the top – go too high and your subject will look like they're in some strange yoga position.

Eye level

With the right lighting, eye level should be fine in most situations. Be aware that your camera height will affect how the portrait looks. Your camera's LCD screen will be vital in helping you assess this. If you're shorter than your subject, consider using a box or a step ladder to reach the right height, but be extremely careful!

Lying down

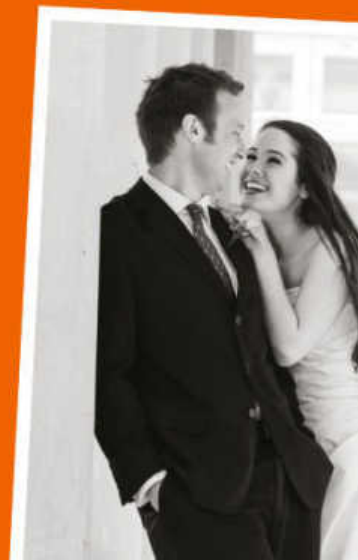
Generally, the lower you go with your camera angle, the less flattering the photo. It certainly won't make large folk look any slimmer. It does, however, create a striking effect and your subject will seem important. Corporate shots of business leaders are often shot from a low angle to create precisely this illusion.

CHAPTER 2



Creative projects

Over 50 inspirational images and the quick techniques you can use to recreate them





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Long or short?

Learn how to get great portraits with telephoto lenses, shorter fixed-length portrait lenses and even wide-angles...

There is no 'perfect' lens for all types of portraits, so it's important to make the most of all the different types of lenses

and different focal lengths at your disposal. This image above was taken with a 200mm telephoto lens, for example. A long focal length can be a great choice for portrait photographers as it compresses the perspective, which can often be more flattering for your subject. It's also to easier to create a blurred background with a telephoto lens, so if you're using a wide aperture such as f/2.8 you can get stunning results, as the blurred

part of the image can often look lovely. However, a short telephoto is typically the portrait photographer's favourite focal length – with a 70mm on an APS-C camera or a 105mm on a full-frame model being ideal. It's as much about how close you end up getting to your subject, as the perspective you achieve. A 105mm usually gives a comfortable working distance from the subject to the photographer.

At the other extreme, you can also get pleasing portrait results with a 20mm wide-angle lens. Before going any further, please note that a wide-angle is

not normally the 'go to' lens for portrait photographers. Even the best wide-angle lenses can be less than flattering to your subject, as if you're too close, noses and foreheads appear larger. If you are not careful you can end up with something that looks like a caricature, which your subject won't thank you for.

Wide-angle lenses do have their uses in portrait photography, however. While not great for headshots, they're perfect for environmental portraits where you want to show someone in their surroundings, and can keep them relatively small in the centre of the frame.



Good backgrounds

Understanding how different lenses behave will help you get the background you want – essential for reducing clutter or adding context

Knowing how different lenses will affect perspective in your images is as important to the photographer as learning how to draw converging lines is for a draughtsman or architect.

By changing the distance between the camera and the model and altering the focal length, we can manipulate the perspective and get some very different results. For the main image here, we shot our model Elle with a focal length of 185mm. Much less is visible in the background, the sky is out of the shot and the

setting is much less important to the image. Elle is very much the focal point of this composition.

There's no right or wrong focal length to use, as it depends on how you want your image to look, but it is a great way to manipulate the background in shots.

Sometimes it can be hard to control the background when taking outdoor portraits, and using a longer focal length in this way is a great way to get around ugly visual distractions and clutter that can detract from the main subject. It's also worth noting that (as

a very general rule) if you're shooting a portrait, it'll be more flattering to the subject at the longer end of the scale.

There may be times when you want to keep a sense of context in the background, as in the 'before' shot above. Here, we started off fairly close to Elle, with a focal length of just 35mm. You can see the sweep of the buildings behind her and make out the clouds in the sky. Keeping context in the background can give a real sense of place, something which is particularly important in travel and documentary work.

Restrict depth of field

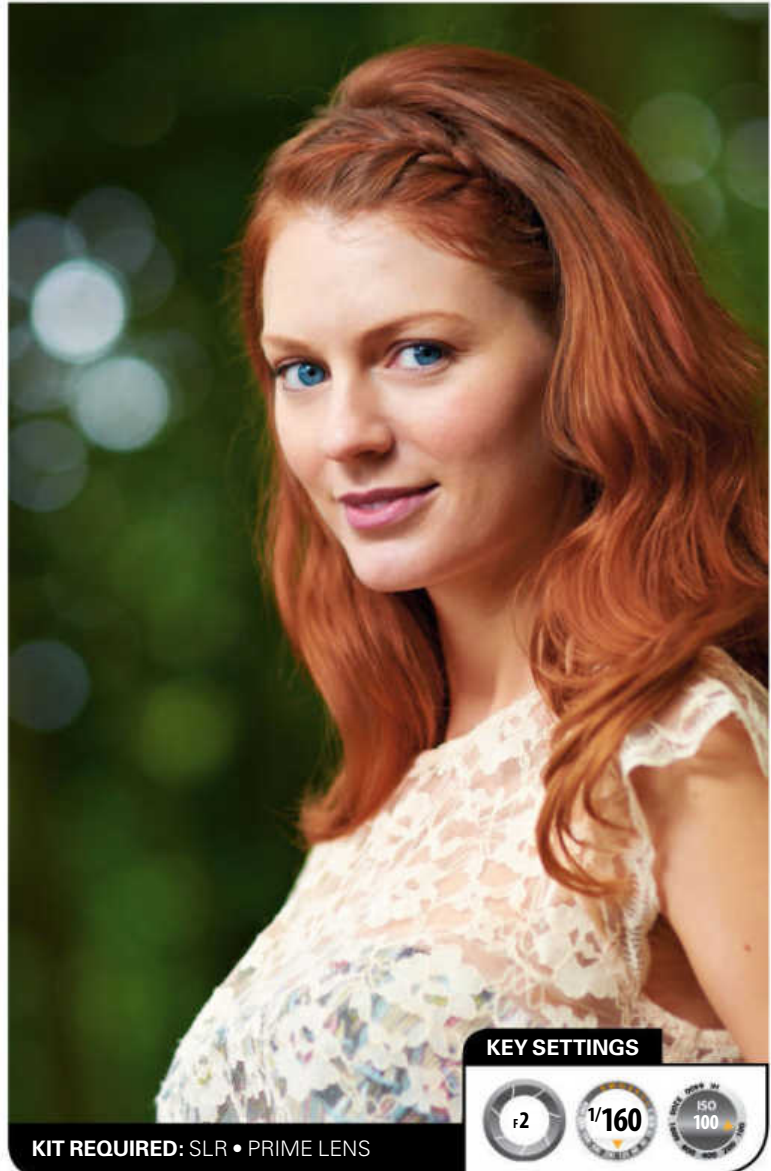
Control how much of an image is in focus from front to back with this easy guide to a fundamental portrait skill

The amount of an image that appears sharp from the front to the back is key to its look and feel. Using a

shallow depth of field, where only a small part of the portrait is in focus, concentrates most of the viewer's attention on the sharp areas, while deliberately keeping more of the scene sharp makes the subject's surroundings more visible. As there are things that determine the depth of field in your shots – aperture, focal length and distance from your subject – it can take practice to get the exact effect you want. One of the easiest ways to control the depth of field is to change the aperture that you use. For shallow depth of field, choose a wide aperture (small f-number) such as $f/2.8$ or $f/4$.

To capture more of the scene in sharp focus, use a smaller aperture (larger f-number), such as $f/11$ or $f/16$. Prime lenses offering wide apertures (such as a 50mm $f/1.8$) produce a really shallow depth of field, which makes them the perfect lens for portrait photography.

With most portraits it's essential that at least one of the eyes is sharp, and when using shallow depth of field, it's critical that you focus accurately on this area. Select single or one-shot mode for static subjects; for moving subjects, set the camera to continuous AF. Then track the subject and select the focus point so that it corresponds to where the subject's eyes are in the frame.



KEY SETTINGS



KIT REQUIRED: SLR • PRIME LENS



KIT REQUIRED: SLR WITH SPOT METERING • ZOOM LENS

Spot metering

Get better exposures in tricky lighting conditions by selecting spot metering, rather than relying on your camera's default mode

The default matrix, or multi-segment, metering on most SLRs is accurate and reliable in most shooting situations.

However, if you're shooting into the light or against a light or dark background, the results can sometimes be under or overexposed. It's not always easy to get the exact light level you want using exposure compensation.

For complete control, use spot metering. Instead of taking several readings all over the subject, your camera's spot meter takes one from a tiny area of the subject. It takes some

practice to get used to spot metering, but is well worth it. The trick is to position the test area over the correct part of the subject. As with all metering systems, the exposure you're given will be based on a mid-tone. So, to use spot metering without having to adjust the exposure, you need to place it on an area of the subject that you want to be recorded as a mid-tone.

To change the metering mode on most cameras, you either go to the shooting menu or press the metering mode button and use the input dial.

Spot metering is often shown by a small dot in the centre of the metering display, and high-end cameras often have a dedicated metering mode switch. Position the focus point over the area of the subject you want to be a mid-tone; for portraits it will usually be a skin tone. To get a better feel for how colours translate into greys, convert a few of your existing shots to greyscale in Photoshop. With the Eyedropper tool and the Info screen open, look out for areas that have a K value of 50% to identify those important mid-tone areas.

Fill-in flash

While direct 'full on' flash can be unflattering, using it to fill in shadows caused by strong sunlight is a key skill to master

Many photographers dismiss flash because of the harsh, direct light it can produce, but this need not be the case.

Two easy but effective ways to use flash to transform your outdoor portraits are 'fill-in flash' and off-camera flash. Attaching a flashgun to the hotshoe of your camera, or even using the built-in unit, is the easiest and most convenient way to use flash. This doesn't produce the most flattering light as the main light source, though. The light goes directly towards the subject, hitting them hard, and the results can look amateurish. However, it is ideal for a technique known as fill-in flash, where you use the light from the flash to throw light into the shadows produced by harsh overhead sunlight. So try it on a bright sunny day, 'filling in' shadows as needed. As you gain in confidence, you can try off-camera flash. It's easy to think that using off-camera flash is only for pros, but with instant review to see the results, and more options than ever to trigger the flash cheaply and easily, there's no reason to be scared by this technique. It can transform your portraits in an instant. Moving the flash away from the camera allows you to create more interesting and flattering lighting, or even use two or more flashguns. The main options when shooting on location are built-in wireless flash, basic radio triggers and TTL versions. As we will see in the rest of this guide, off-camera flash gives you many more options.



KEY SETTINGS



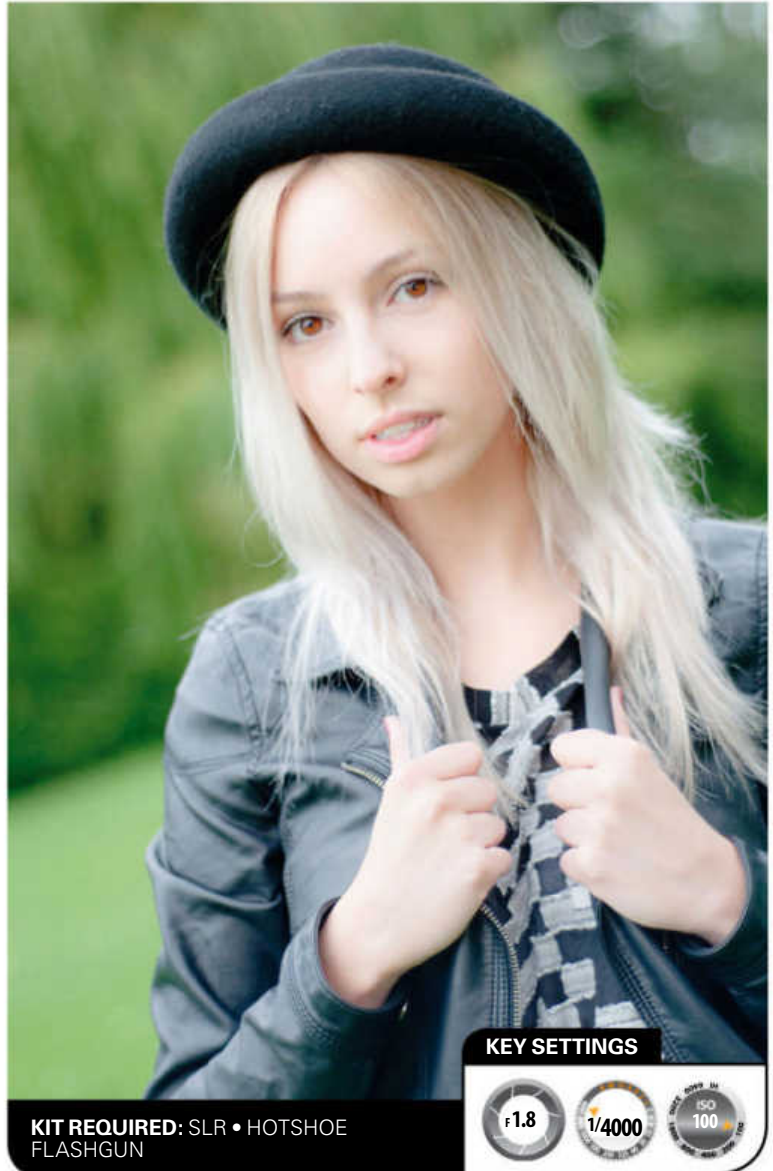
KIT REQUIRED: SLR • FLASHGUN

High-speed flash

Discover this easy way to get great-looking background blur on portraits ('bokeh') while using fill flash

Using flash in daylight is great for adding punch to your portraits – it fills in the shadows around the features and adds catchlights to the eyes. But fill flash can force you to compromise on your exposure settings. Normally, you can't use shutter speeds that are faster than the flash sync speed – typically 1/200 or 1/250 sec. That means you can't use the widest aperture on your lens, so the background ends up being more in focus than you would really like.

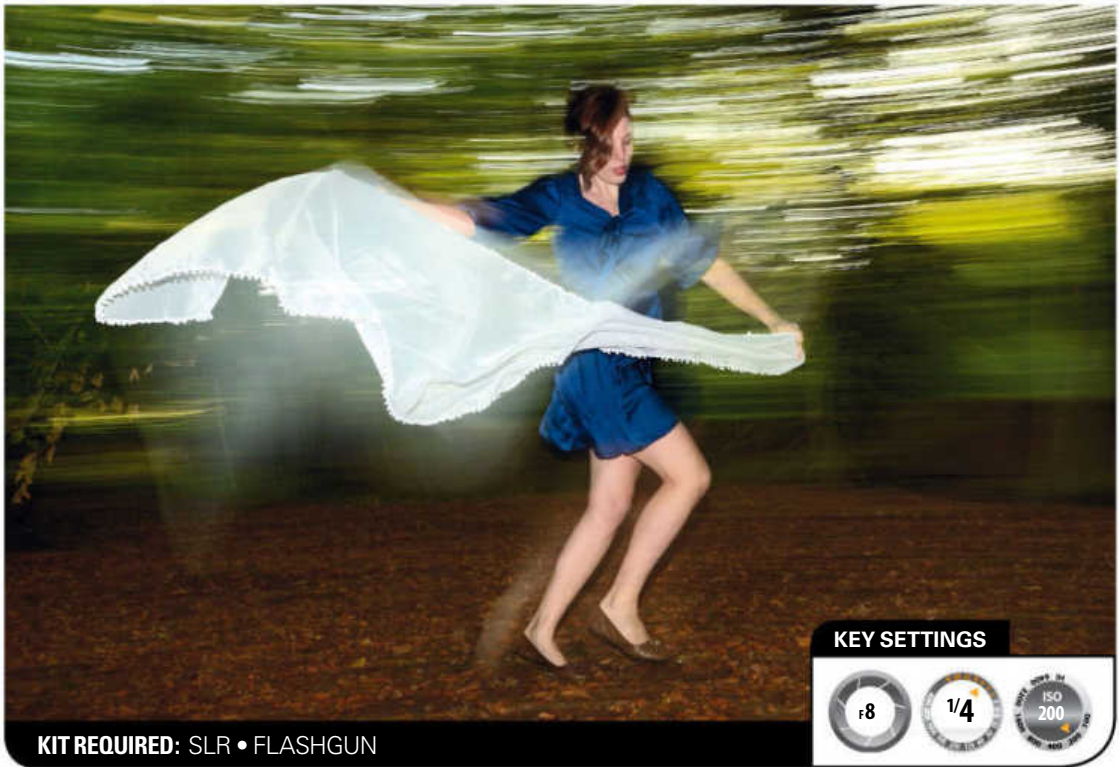
A feature called high-speed sync flash (known as Auto FP on Nikons) makes your flashgun function differently. Activating this feature is different for each camera make, so check in your manual for exact details. Instead of a single flash, it pulses at a very fast rate, switching on and off at up to 40,000 times a second. By default, your D-SLR only lets you use shutter speeds up to the flash sync speed (1/200 sec or 1/250 sec). High-speed sync flash doesn't work with pop-up flash or with basic add-on hotshoe guns. But with the right camera and flash, this option enables you to use flash with the widest apertures, even in bright daylight. As we have seen elsewhere in this guide, being able to throw out the background is a great way to focus attention on the main subject and reduce the unwanted effects of distractions and clutter.



KIT REQUIRED: SLR • HOTSHOE FLASHGUN

KEY SETTINGS





Rear-curtain sync

Add a powerful sense of movement to your shots by getting to grips with slow-sync flash techniques. It's easier than you think...

A flashgun, while very handy in low light, can easily kill the atmosphere. A great way around this problem is to use a technique known as slow-sync flash. As the name implies, this uses a longer shutter speed than normal flash exposures, enabling you to balance the ambient light with the flash exposure. It can be used for a range of subjects, such as portraits at night where you also want to record the light of a cityscape behind the subject. However, it really comes into its own when you want to add a sense of movement to your shots – the longer

shutter speed enables you to capture some motion blur, while the burst of flash freezes the movement. Remember, the faster the subject and the closer it is to you, the faster the shutter speed you can use and still get plenty of blur. Normally, the flash will fire at the beginning of the exposure, which is fine for normal flash shots. When capturing motion blur, though, the blur will occur after the movement is frozen by the flash. This is known as first-curtain sync, and can look unnatural, because the sharp image appears to 'trail' behind the blurred one. To avoid this, you need to set the camera

to fire the flash at the end of the exposure, a technique known as rear-curtain sync. To get started with this, set the camera to Manual exposure, choosing a shutter speed appropriate for your subject's speed and an aperture that will underexpose the background by about half a stop. Also set your flashgun to Manual mode, using the readout to select power level, then set flash sync mode to Rear Curtain. Remember to check the amount of blur on your subject and take plenty of test shots, asking your subject to speed up or to slow down if it's practical to do so.



Strobist sidelit effects

Fancy trying some atmospheric 'strobist' effects? If you are set up for off-camera flash, it's a lot easier than you would think

If you fancy trying some cool 'strobist' off-camera flash effects but fear it could be too difficult, take heart. To produce a moody, side-lit strobist portrait, all you need is a flashgun that supports automatic TTL exposure metering, so it is actually very straightforward.

Once you have set up on-camera flash, you can position the flash either on a lighting stand or on a normal tripod. It's a good idea to place the flash to the left and slightly above the subject to create dramatic side-lighting, making sure the flash is out of the frame. Take some test

shots at different apertures until you get satisfactory settings, and remember that the wireless system needs a direct line of sight between the front of the flash and the camera.

To give your shots more impact, try underexposing the background by setting the exposure compensation to -1 stop (as this underexposure will affect both the flash and the ambient exposure, remember that you will need to increase the exposure from the flash to properly expose the subject).

If you are using flashes that aren't comparable with the wireless off-camera

system, don't worry – you can get the same results by using a radio trigger system to fire your flash. As their name implies, these units transmit a radio signal from a transmitter fitted on your camera to a receiver attached to each flashgun. Radio triggers are much more affordable these days, so long as you are happy to use the camera on Manual and set the flash power yourself. Another advantage of radio triggers is that they can fire flashes over much greater differences than wireless set-ups and don't need a line of sight between the camera and flash.

Passport portrait

Avoid the hassle of the post office or supermarket by shooting your own ID photos, using just a bounce flash and a reflector

Forget about creative lighting for passport shots; all you need is shadowless light.

The easiest way to do this, if you have a white ceiling, is to fit the flash to the hotshoe of your camera. Then, rather than direct the flash at the subject, move the head into an upright position.

Remember, the ceiling needs to be white as if it's coloured, your image will take on that particular cast. If your flash has a built-in bounce card you can twist the head around and use this bounce card to prevent the light reaching the subject directly.

A good tip is to get the model to hold a white reflector under their chin to prevent any shadows from appearing in the final image. Remember, we are not after moody effects here.

When shooting for a passport, remember the basic elements that apply to most passport images. The subject should be evenly lit and taken against a plain background, without any harsh shadows or reflections on glasses. Passport photos need to be printed on photographic paper too, so it's best to get a lab to do them. Remember also there are rules about the size of the overall image and maximum or minimum head sizes within the image. In the UK, they need to be 45 x 35mm and the head needs to be between 29 and 34mm high. Always check the regulations for your destination before starting; there is lots of useful information online.





Spotlight on snoots

Capture theatrical lighting with your hotshoe flash by controlling the spread of light. You just need a simple add-on tube called a snoot

A snoot is one of the handiest tools you can keep in your camera bag. It's a long tube or funnel that attaches to your flashgun, converting it from a floodlight into a spotlight, and thereby picking out a small area of the scene. A snoot is very useful when you are photographing a portrait against a wall. Even though most add-on strobes have a zoom head that allows you to narrow the spread of light, the flashgun will still light up the majority of the frame. A snoot restricts the spread to a narrow beam, so that some areas of the frame are not lit at all by the flash. This

is an effect that is not just useful for portraits, it can also be used for still-life.

A snoot comes into its own when the background is very close behind the subject. It's particularly effective for moody male portraits, as above, where you don't want the background to be as well-lit as the subject. To achieve a similar effect to this shot, it's wise to use Manual exposure mode (1/125 sec at f/6.3 at ISO 200 is a good starting point).

Take a test shot of the background without flash to check that the shot looks dark enough. Then simply add

your snoot to your flashgun (we used a Large Rogue Flash Bender which you can pick up for around £80, but there are cheaper options online). You also need a trigger for the off-camera flash and a way of holding the flash in the right position, such as a tripod. The exposure for the subject is controlled by altering the power output of the flashgun. Use the flash in Manual mode, starting off at 1/8 or 1/16 power. Take a test shot, reducing or increasing power for best results. While dramatic, you also want your image to retain some realism.



Using a bounce card

Harsh flash can kill the atmosphere indoors, but all you need to do is twist the flash head and use a bounce card for more natural light

B'ouncing' flash, by aiming it at a ceiling or a wall, is a good way of getting more natural looking pictures, as the light becomes more diffuse and even.

Bounce flash can look bland, however as the light can be a bit too even. Portraits also lack sparkle, as eyes don't have 'catchlights' (the small, bright reflections of flash in people's eyes). To get around these issues, it's a good idea to use the pull-out 'bounce card' found on many hotshoe guns. This white plastic sheet directs some of the flash output straight at the subject, giving a smidge of direct

light and adding mirror-like catchlights. Getting started is easy. The camera and flash can be set to take care of the flash exposure for you, even when you're bouncing the light. Set the flashgun to its TTL mode. Use the Aperture priority (A) exposure mode on your D-SLR, so that you can set a wide aperture that suits most portraits. Then check the colour of the ceiling. White is ideal, but off-white will do. We're used to things being lit from above, so ceilings provide natural-looking illumination.

It's important to choose a white coloured ceiling, as a coloured one will

give your images an unwanted colour cast, which can be a real pain to remove afterwards. You can bounce flash off a white wall too, as this can look like window light. Simply pull out the white bounce card with the wide-angle diffuser, then push back the diffuser.

After you have taken the shots, look at your results carefully on the back of the camera, checking the histogram for signs of both over- and underexposure. If the flash isn't bright enough, or is too bright, use the flash exposure compensation facility to increase or decrease the light level as required.



Using a CTO filter

Do the subjects tend to look like they've used too much fake tan when you've used flash? Here's how colour-correction gel can help

Pop-up or hotshoe flash is a necessary evil when taking pictures of people after dark, as however high your camera's light sensitivity, you can only push it so far without the image degrading.

After dark flash can appear crude, however, one of the major reasons that simple flash images don't look so great is that the colour of flash is so different from the ambient lighting. Shoot indoors at a party or out on the high street and the background will look unnaturally orange, due to the predominantly tungsten bulb lighting that surrounds you.

For more pleasing flash portrait effects, a solution is to fit an orange filter to your flash – this gel is known as CTO (which stands for Colour Temperature Orange). With this gel in place you can then turn the white balance to its incandescent setting and use the flash in the usual way. Coloured gels are available in rolls from pro dealers and stage lighting specialists. Companies such as Rosco, Holi and Rogue make reasonably priced kits of pre-cut gels for photographers, or you can buy them cheaply on eBay.

Simply put the orange coloured CTO gel over the diffuser panel on the head of your

flashgun. You can use masking tape or a rubber band to hold in place if you are taking lots of shots, but holding it over the flash is easier for one-off shots. Adding the gel will correct the colour temperature of your flash from daylight to tungsten. Just be careful to check that your SLR doesn't give you completely orange pictures by adjusting White Balance to the Incandescent setting. While you can adjust white balance with image-editing software if you shoot in RAW, using a colour correction gel in this way to get in right in camera can be significantly less fiddly and time-consuming.



Freeze with flash

Discover how to stop high-speed action with hotshoe flash – using flash, rather than shutter speed, to capture action gives more options

Freezing high-speed action, such as a dancer in mid air, may seem a big technical challenge, but it's not difficult, and just requires fairly simple, affordable equipment (a couple of hotshoe flashguns and a set of wireless flash triggers).

The secret to this technique is using the very short duration of the flash – as short as 1/40,000th of a second. If everything else in the room is dark, the light emitted from the flash effectively becomes your camera's shutter speed, making it perfect for capturing motion.

Aside from the camera kit and a sizeable space, you'll also need a few other items, including a black background that's wide enough to give your dancer enough room to allow her to leap, and a trio of tripods to hold and position your strobes and your D-SLR. Here we used a black theatrical drape, but a paper roll would do. Or, shoot outdoors at night and use the night as your black background. Just make sure you have plenty of dark empty space.

With your background sorted, set the camera to Manual, as you are

using the flashguns to expose the shot. With shutter speed, set it to the maximum flash sync speed for your camera to stop any ghost blur. Put the camera on a tripod, attach the wireless flash transmitter to the hotshoe and the receivers to the flashguns. Do a quick test, then put the flashguns on tripods or mounts. Then place the flashguns either side of the backdrop and adjust as necessary. Adjust the power of both flashes to a half and check exposure – once you are happy with exposure, attach a shutter release and shoot.

Colour it with candy

Don't feel bad if you've just eaten a tub of sweets – find the wrappers and you've got some instant gels for portrait shots!

Did you realise that sweet wrappers can create low-cost 'gels' that can turn the light from a flash red, green, blue or purple?

In other words, they are a wonderfully cheap and tasty way of painting subjects in the foreground an unusual colour (if you are watching your weight and don't have sweet wrappers handy, check out the Rosco Strobist Collection for £10).

First, simply fasten the cellophane sweet wrapper carefully around the flash tube using a rubber band or electrical tape. Make sure the plastic is not touching the flash reflector, as this can get hot and melt the cellophane. The flash colours subjects in the near distance, and tends to show up better on light-toned surfaces.

To maximise the colour, turn White Balance (WB) from auto to one of the presets. The Incandescent option works well with a red wrapper when shooting portraits outdoors. If the pop-up flash isn't bright enough, you may need to go to the custom settings in your camera's menu. In the flash options select Manual. Then turn power to Full. Adjust overall brightness using exposure compensation, watching for any blown-out highlights. You need never feel guilty about eating sweets again...



KEY SETTINGS



KIT REQUIRED: SLR WITH POP-UP FLASH
• COLOURFUL SWEET WRAPPERS

Twin-flash strobism

How to transform flat daylight into a moody backdrop for a sports portrait, using just a couple of flashguns and some creative flair

Directionless, overcast light can kill moody outdoor portraits dead, but all you need are a pair of off-camera flashguns to lift your subject.

By cross-lighting our rugby player in this image with two flashes, we recreated the dramatic look that you often see in pro sports portraits.

To get this effect, we placed one of our flashes behind our subject, angled back towards the camera; the light from behind hit the edge of the body, creating the bright highlight that separates the subject from the dark moody backdrop. Then, we positioned the second flash in front of him to illuminate face and body.

So to get started, work out a 'normal' outdoor exposure, set the composition and switch to Manual mode (try underexposing the ambient light by two stops). Set up your first flash on a stand behind the subject, angled back towards the subject and camera. Attach a wireless trigger and set the flash to Manual power. Then, take a few test shots and adjust the power until the backlighting looks right. The flash should create a highlight along your subject's edge. Place the second flash in front of the subject to light their face and body. Set the second flash up on a stand and again use Manual power so you have full control over the output. Set it to 'slave' mode so it detects the other flash and fires at the same time. Then take a series of test shots and adjust settings as necessary.



KEY SETTINGS

KIT REQUIRED: TWO FLASHGUNS • WIRELESS FLASH TRIGGER • STANDS





KIT REQUIRED: SLR • TRIPOD • MIRROR • MODEL • PHOTOSHOP

Magic mirror effects

Get creative with reflections to create a spellbinding composite image that lets you see right through your subject

Reflections are a great way to add intrigue to your images by offering a glimpse of the scene beyond the edges of the frame.

They add an enigmatic effect and also evoke the lens of the camera.

The first job is to mount your camera on a tripod. You will need to take two images, one with the model and one without. When it comes to exposure, keep it consistent, so it's a good idea to switch to Manual mode. Here, we used a shutter speed of 1/60 at f/4 and ISO 640. Another good tip is to use a reflector. We used a large

silver reflector off to the side on the right and hidden from view, so we could bounce the sunlight back at the model's face (white gives a more subtle bounce, while gold warms the image up).

On the computer, open up your two images in Photoshop. Take the shot of the model, go to Select>All, and press Cmd/Ctrl+C to copy it. Then go to your image without the model and press Cmd/Ctrl+V to paste the model shot onto it, as a separate layer. Grab the Quick Selection Brush from the toolbar and paint over the mirror's

surface to select it. Zoom in to check the edges; hold Alt and paint to make corrections if needed. Then, go to Select>Refine Edge, and set Radius to 2px, Smooth to 20, Feather to 1px. Select Layer>Layer Mask>Hide Selection.

To give the mirror a hazy quality, Cmd/Ctrl+click the mask thumbnail, then go to Select>Inverse. Create a new layer and paint with a white brush around the mirror's edges. Finally, create another layer, grab the Spot Healing Brush, set Sample All Layers, and paint over any distractions.



Stitch-up your kids

Turn your living room into a makeshift studio – but don't worry, there's the minimum of kit – and then have the family in photo stitches...

This photostitch project is the perfect thing to try on a wet Sunday afternoon. Simply clear a bit of space around a plain white wall, so you can set up some basic equipment, gather a few outfits or props and then set up your flash. Flashguns are a small light source, so the light is hard and unflattering, so fix a white umbrella to it. Attach your flash to a tripod using the thread in its stand, then rig an umbrella in front of it. If your flashgun is compatible, you can control it wirelessly with your camera's pop-up flash. If not, use a sync lead or remote

trigger. Use Manual mode, and set your shutter speed to about 1/200 sec. Set the aperture to f/11 and take a test shot. Adjust the aperture or flash power as needed to get the correct exposure.

Portraits taken at eye level create a connection between viewer and subject, so when taking photos of children, get the camera down to their level, and then try some close ups to add a bit of variety.

Open the images in Photoshop or Elements. Grab the Lasso tool, set Feather to 10px, then drag a rough selection around a figure. Hit Cmd/

Ctrl+C to copy, then go to File>New. Make a new white document and hit Cmd/Ctrl+V to paste. Then Grab the Move Tool, set Auto-Select Layer and Show Bounding Box in the options, then use the tool to position the first figure and resize it if necessary.

Then simply select, copy, paste and position the other figures in the same way. To finish off, go to Layer>Flatten then grab the Dodge Tool, set Range to Highlights and Exposure to 20%, and paint to dodge any areas where parts of the cut-out wall look grey, until they're perfectly white.

Golden halo

Shooting into the sun is a great way to give an uplifting, sun-kissed feel to portraits and turn lens flare from a negative into a positive

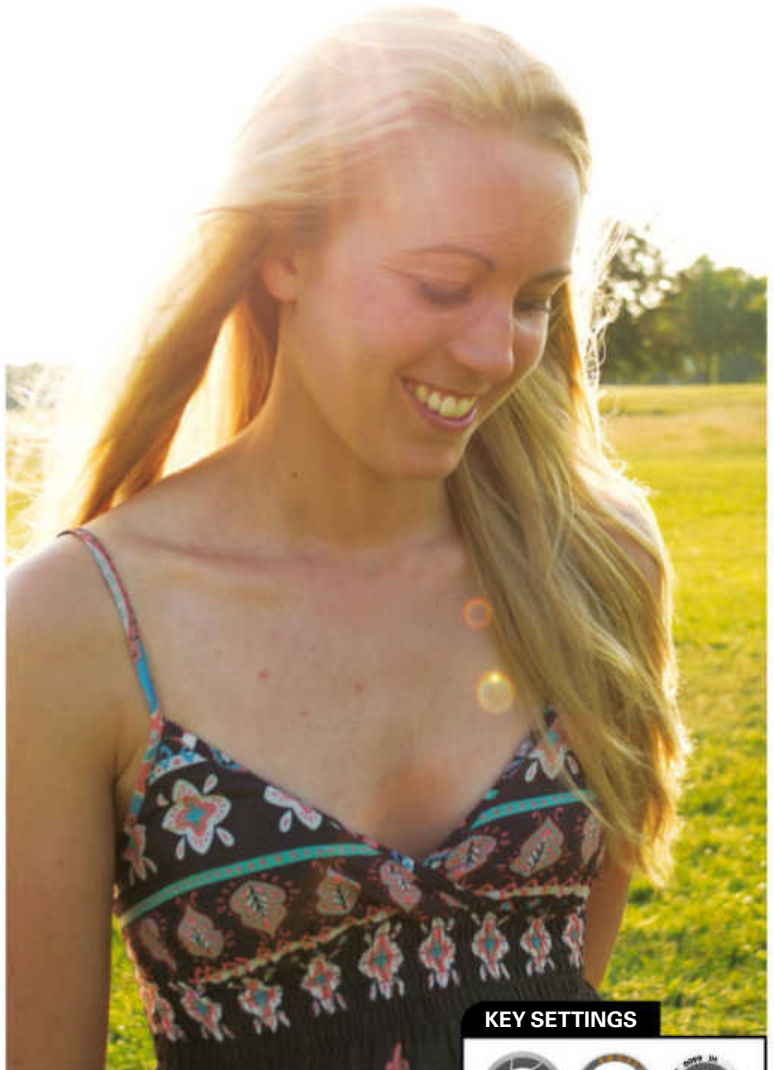
Using the sun to backlight shots of people is a nice way to add a summery, sun-kissed feel to portraits, and is especially popular in fashion and wedding photography.

To get the best results for this technique, switch White Balance, focus and exposure to Manual.

We shot our model, Athene, on a July evening, and waited until 8pm for the sun to be at the right height to frame her face. Anyone with blonde hair is perfect for this, as the sun will shine through and light up fair hair. First of all, switch to Manual exposure, to prevent your camera from overcompensating for the light and silhouetting your model by mistake.

A wide aperture, such as f/5.6, creates shallow depth of field, and ISO100 is fine. Experiment with shutter speed – overexposing two stops with a setting of 1/125 sec should give enough definition. Shooting into the sun means autofocus will struggle so try shield your lens from the sun with your hand, focus on your subject's face, then take your hand away and shoot (or focus manually).

To avoid blowing out your photo, and to keep your subject's features properly defined, you will need most of the sun behind your model's head. Don't worry about lens flare, as it can create an attractive look, redolent of 70s portraits. Groovy...



KEY SETTINGS

KIT REQUIRED: SLR • ZOOM LENS
(AND LOTS OF SUNSHINE...)



Timeless monochrome

Quick and easy tips for selecting images for black and white conversion, and the most effective ways to do this in Photoshop

Black and white portraits have a classic quality about them that stands the test of time (a reason they are still taken by wedding photographers).

Portraits are ideal for a mono makeover, because faces are more defined by shape than by shade. When choosing images for black and white conversion, look for strongly defined shape, tone and texture. Your camera may have a mono shooting mode so you can immediately see how well a scene will work without colour. For ultimate control over your black and white conversion in Photoshop, forget about one-click commands such as Desaturate and instead use a Black and White Adjustment Layer – click the Create Adjustment Layer icon in the Layers Panel and choose Black and White from the list. This gives you the option to control the luminosity of individual colour ranges during the conversion. For black and white portraits, a quick increase in red and yellow will lift skin tones for a cleaner finish that softens spots and blemishes. What's more, if you want interactive control, click the hand icon at the top left of the Adjustment Panel, then click and drag within the image to the left or right to target and adjust the brightness of specific colour tones. Mono conversions tend to work best with a boost in contrast, so add a Curves Adjustment Layer and make a gentle S-shaped curve.



KIT REQUIRED: SLR • ZOOM LENS •
PHOTOSHOP

KEY SETTINGS



Beautiful backdrops

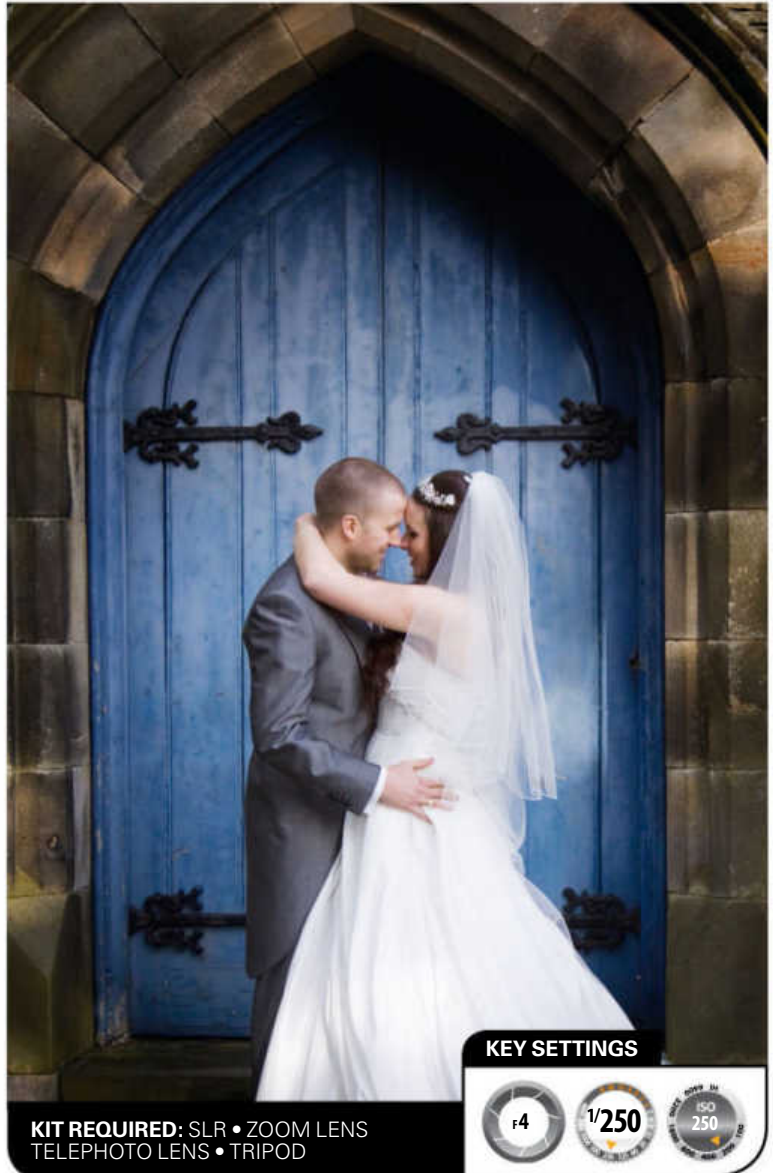
Make the most of doorways, arches, bowers and other attractive architectural features to give your portraits some extra class

Whether you are shooting weddings or more low-key portrait jobs, taking advantage of colourful backdrops is a great way to add colour to your shots.

Doors and door arches also help to frame your subjects, as well as providing an interesting-looking background in their own right. If you do get asked to shoot a wedding, try to scout out the location the day before the ceremony. Arches, doors and bowers are great to pose people against.

Shoot wide to include the subjects and the backdrop, and don't be afraid to go in closer for more intimate shots. Once you have got a conventional shot of a couple embracing, be a bit more adventurous by suggesting they stand either side of an attractive door arch, for example.

Also, pay attention to clean composition at all times, ensuring door handles and other bits of ironwork don't end up sprouting from somebody's head (litter and other clutter should also be avoided). Depending on your lens, you might get some distortion on the verticals of a door arch, where they appear to 'lean in', but this can be easily rectified in image-editing software. Check out the Lens Corrections tool in the Develop module of Lightroom, which is very easy to use. It may involve some cropping, however.



Rembrandt lighting

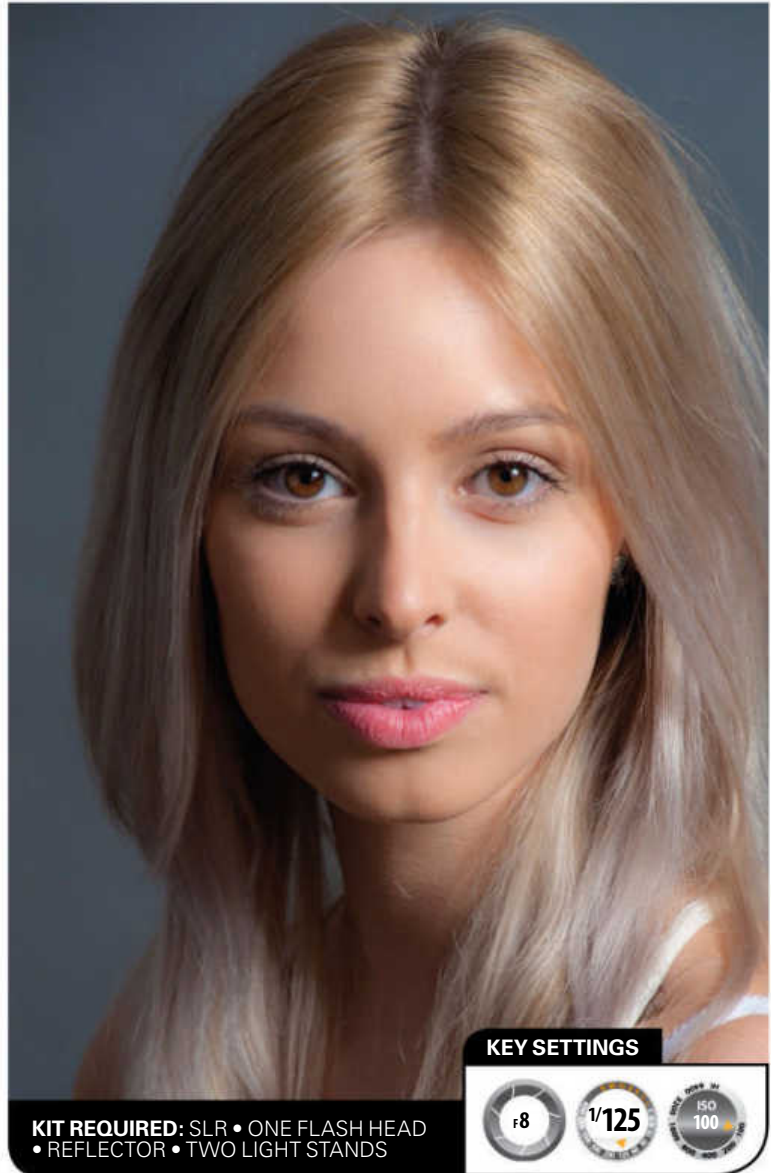
Master artistic shots with depth with this great home-studio technique – it doesn't require lots of complicated gear, either

Studio lighting can seem daunting if you've never done it before, but it's not as scary as you'd think.

By using a simple home studio kit with just a couple of flash heads and a few basic accessories, you can get great results in no time.

Our basic but effective home studio set-up consists of lightstands, two flash heads, an umbrella, a softbox, a snoot/honeycomb and a reflector. A classic lighting set-up, and one that's good to get started with, is often called Rembrandt lighting, named after the famous painter. When it's done correctly, this set-up will create a triangle of light on one side of the face in the cheek area, as often seen in Rembrandt's work. Ideally, you should try and set the lights up in such a way that the shadow from the nose points towards the end of the subject's lip. To get started with the Rembrandt effect, position one flash head with a silver brolly at a 45° angle to the model at about six feet high.

This creates a strong, hard, direct light from the side and above, called a key light. To even the lighting, position a reflector on the other side of the model to bounce the light back into the shadow side. There should be a small triangle of light on the subject's face. It's a great technique, but don't over-use it – there are plenty of others to try and you don't want to become predictable.



KEY SETTINGS

KIT REQUIRED: SLR • ONE FLASH HEAD
• REFLECTOR • TWO LIGHT STANDS



Clamshell effects

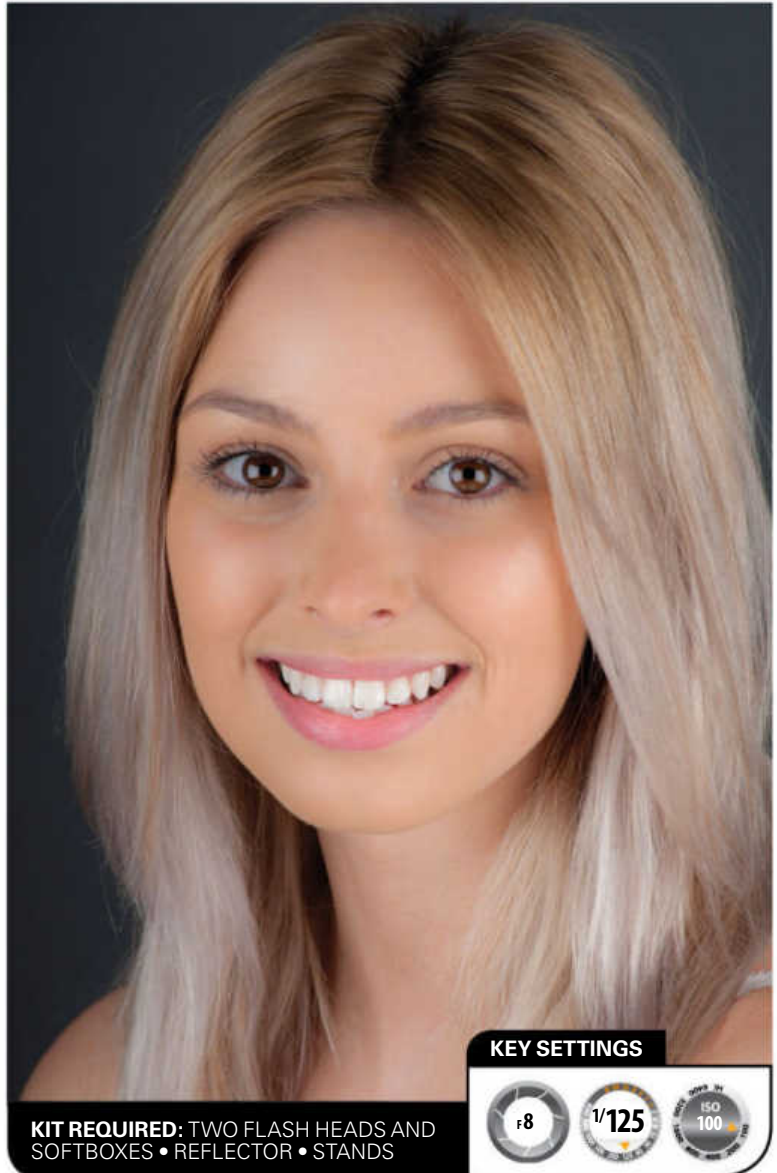
If you want to take beautiful portraits with flat, even light, this is a great technique to try, and it's pretty easy to achieve

The 'clamshell' set-up is another great studio-lighting technique, and is used to capture every

detail with even light. It's called 'clamshell' simply because the shape of the light is supposed to resemble an open clamshell.

Since the lighting is flat and even, the clamshell approach is particularly suitable for beauty images. It's pretty easy to achieve this effect too – all you need to do is place two softboxes on either side of your subject at the same angle and at an equal distance.

Set the power so it's the same from each light. Try using a reflector under the face – your model should easily be able to hold this. This will bounce light up and onto the face. Because it's straight on, the light pours into all the lines and wrinkles, and the reflector below helps to fill in eye bags and shadows under the chin. If you are struggling a bit with the exposure on any of these home studio lighting techniques, a good tip is to switch your camera to Manual mode and use the histogram and the LCD to assess the exposure and effect of the lights. Simply use the dials to change the power of the lights, and the aperture to alter the exposure (a wider aperture will obviously let in more light, while narrowing the aperture will have the opposite effect). Take your time and experiment as required.



KEY SETTINGS



KIT REQUIRED: TWO FLASH HEADS AND SOFTBOXES • REFLECTOR • STANDS

Using a hair light

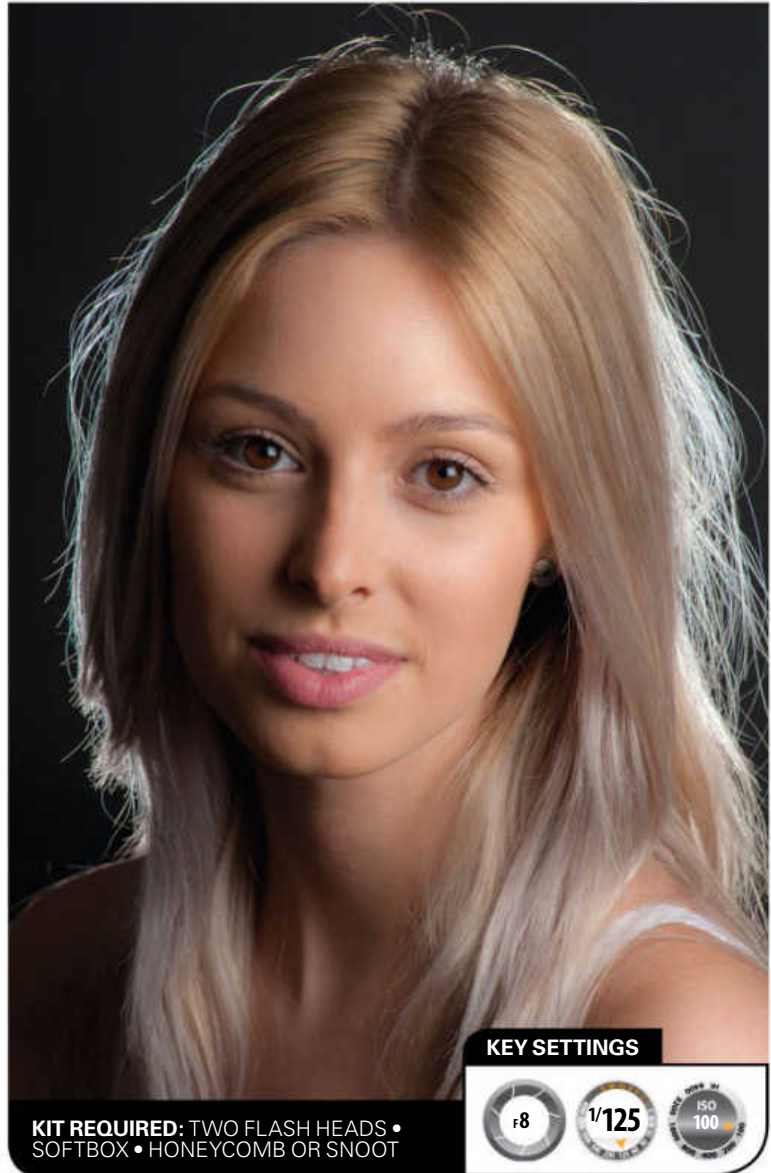
Read on to discover how to get professional-looking backlight effects – it's a simple procedure that can make a big difference

A great way to add drama to home studio portraits is to use a honeycomb or snoot accessory on one of the lights – both of these tools help to concentrate or 'focus' the light.

So, they are ideally suited for use as backlights or also for isolating a particular part of an image. To get a nice backlight effect, position the honeycomb or snoot accessory behind the model, pointing back towards the camera so that it lights the back of their head. This is a great way to add drama and depth to a photo, and it also creates a sense of separation from the background. Of course, you need to make sure the backlight isn't visible in the shot.

If you are struggling to set the power of the flash heads in any of these guides, remember that the power of flash is measured in Watt-seconds. Each of the heads we're using here is 400 W's, which approximates a guide number of 64. This should be fine for regular portrait work.

Remember also to ensure that your model gets their hair ready before you start shooting, obviously depending on the kind of portrait you want to achieve. More natural and spontaneous-looking hair may be fine for a relaxed portrait, but you don't want stray hairs spoiling the effect of a more formal portrait sitting. These kind of portraits require careful preparation so work out your plan beforehand.



Rim lighting skills

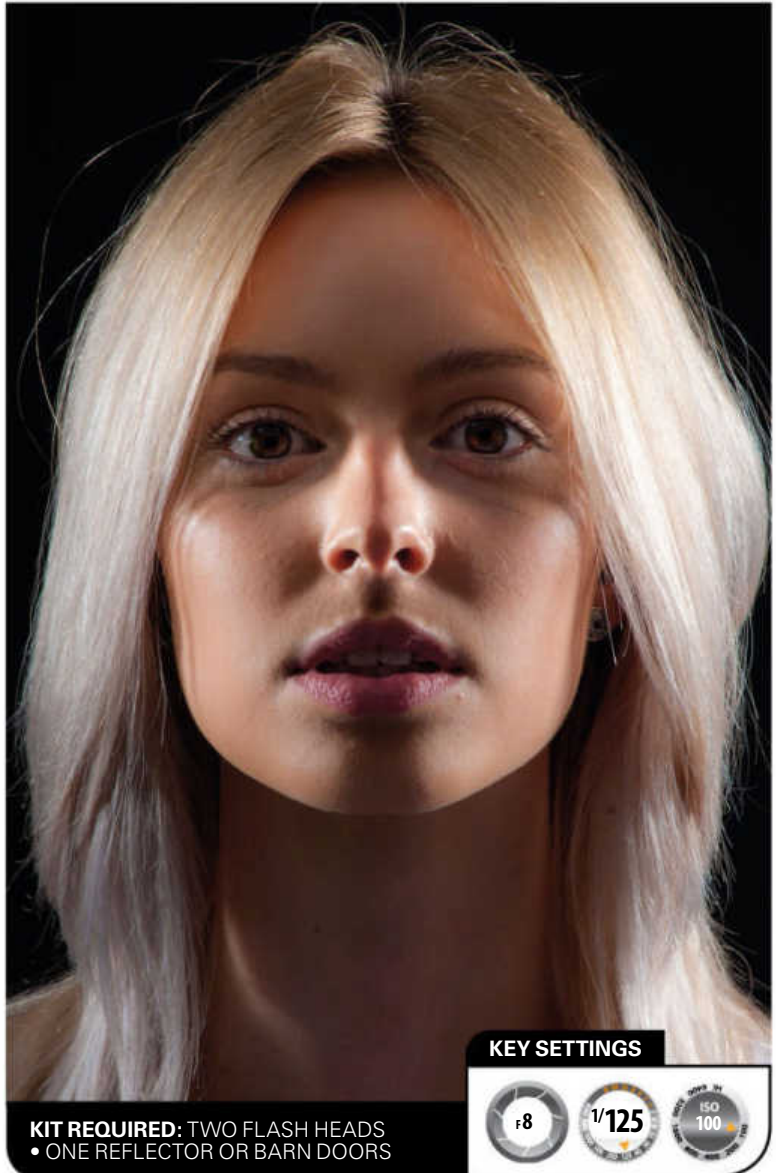
An ideal method for emphasising the outline perimeter or shape of your subject's head, again with great background separation

This is a nice technique if you are seeking exciting-looking portraits with good definition on your model.

To get started with rim lighting, try placing both lights slightly behind the subject, pointing back towards the camera. This set-up requires some tweaking and can work really well with nudes as it helps define body shape. You'll need to watch out for lens flare, though, as the lights are pointing back towards the camera. A set of 'barn doors' (light modifiers that shape and direct light), a lens hood or a shield can help prevent this and don't cost too much.

Alternatively, bring in the services of an assistant who can hold a carefully positioned reflector – this will help fill in those areas of deep shadow on your model's face. Rim lighting is a great technique with plenty of wow factor, but as with Rembrandt lighting don't overuse it – variety is key to developing a great home-studio portrait portfolio.

If you are struggling with shutter speeds on any of these home-studio lighting techniques, remember that you need to be careful not to set a shutter speed faster than your camera's specified sync speed. On many SLRs, this is usually either 1/200 sec or 1/250 sec, but check your manual to be sure. If you try to set a shutter speed any faster, you run the risk of getting horrible black stripes across your images, which is never a good look.



KEY SETTINGS



KIT REQUIRED: TWO FLASH HEADS
• ONE REFLECTOR OR BARN DOORS



KIT REQUIRED: SLR • MODEL • REFLECTOR

KEY SETTINGS



Fine-art nudes

Get to grips with the basics of elegant fine-art nude photography with our essential guide to working with models and core techniques

There's a fine line between capturing a stylish 'fine art' nude and something altogether less tasteful. A good starting point is to try and think along the lines of an implied rather than full nude – a simple suggestion of nudity, rather than outright display, often creates the most powerful images. It's also a good idea to direct your model to avoid eye contact with your camera's lens in order to get a classier, more tasteful look. Once you've got the model into a pose, take a few shots, then change the angle and focal length to get a variety of shots. You'll often find that the

shoot will start to evolve easily once you get going. Checking your settings and kit between poses will give your model a chance to change position without feeling under scrutiny, and will help avoid feelings of awkwardness (as well as ensuring you're set up for the best possible photographs). If you are working with a model for the first time, make sure you're up front about what you're expecting. It's essential to see proof of age and photo ID, and get a signed model release form. Getting the most from models is all about good communication. When it comes to image capture, remember that

nude images work well in black and white. Switch your camera's preset or picture style to mono so the display is in black and white and you can better visualise the end result and concentrate on the form, texture and shapes in your final composition.

Studio lights are great for nudes, but remember that natural light is simpler and can often give much better results. The available light from some large windows was perfect for our shot above. You can also use a simple reflector to bounce light into areas of deep shadow as a finishing touch.

Colour creativity

Add instant oomph to your portraits by focussing on different colours and colour combinations in your compositions

Most of us use colour in our photography without really thinking about it, but as soon as you start to consider which shades you can use in your shots – and how you match colours together in your compositions – you'll notice a dramatic change in your portraits.

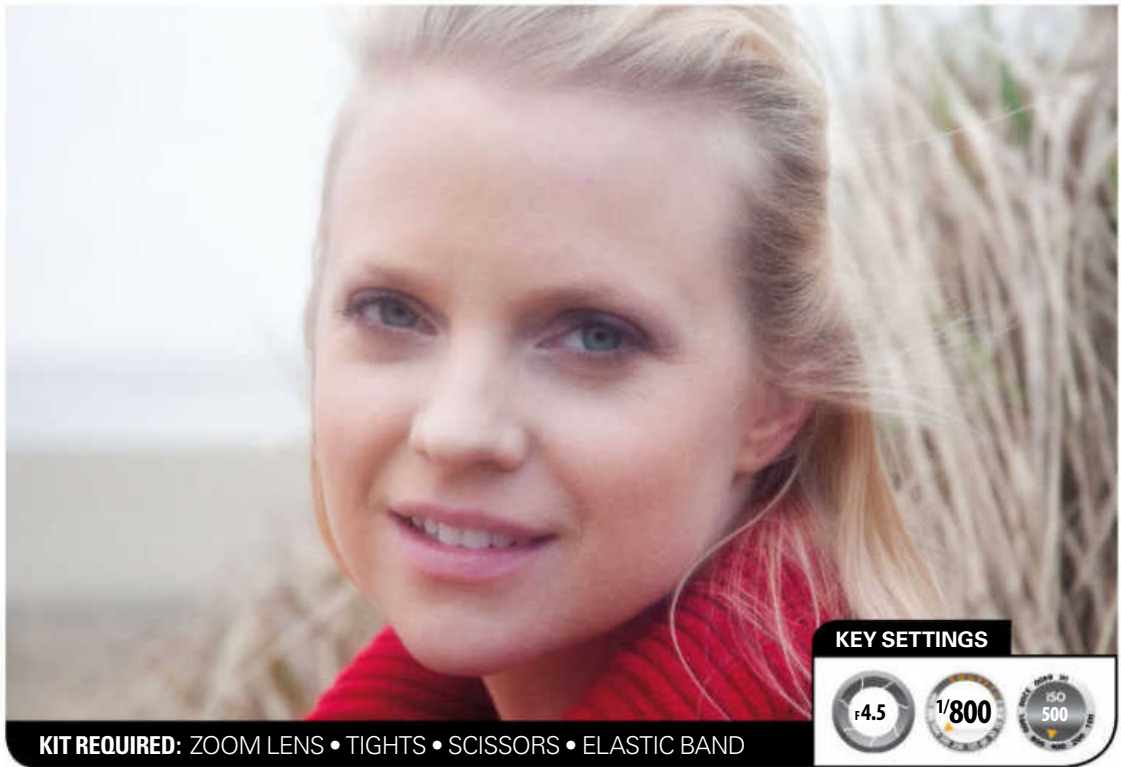
An easy way to experiment with colour is by adding a bright pop of one shade to an otherwise neutral composition. Red is a fail-safe choice, but any warm shade, such as orange and pink, will also work well as a focal point. In the image here, the model's red lips and scarf stand out against her black coat and the grey walls, drawing the eye in and making the shot come alive. Once you've mastered a single splash of colour, try contrasting two shades for a bright, exciting portrait. The easiest way to pick two shades to use together is by referring to the colour wheel (see <https://color.adobe.com>). Colours that are directly opposite each other, such as orange and blue, or red and green, will usually complement each other well. Also, colours can evoke very strong emotional reactions when we view them. Red, for example, symbolises passion and danger, while blue has an instantly calming effect. Play on the viewer's feelings by creating a shot that uses multiple shades of only one colour – and don't be afraid to be bold and experiment for dramatic effects.



KEY SETTINGS

KIT REQUIRED: SLR • ZOOM LENS
• MODEL WITH BRIGHT CLOTHING





Soft-focus effects

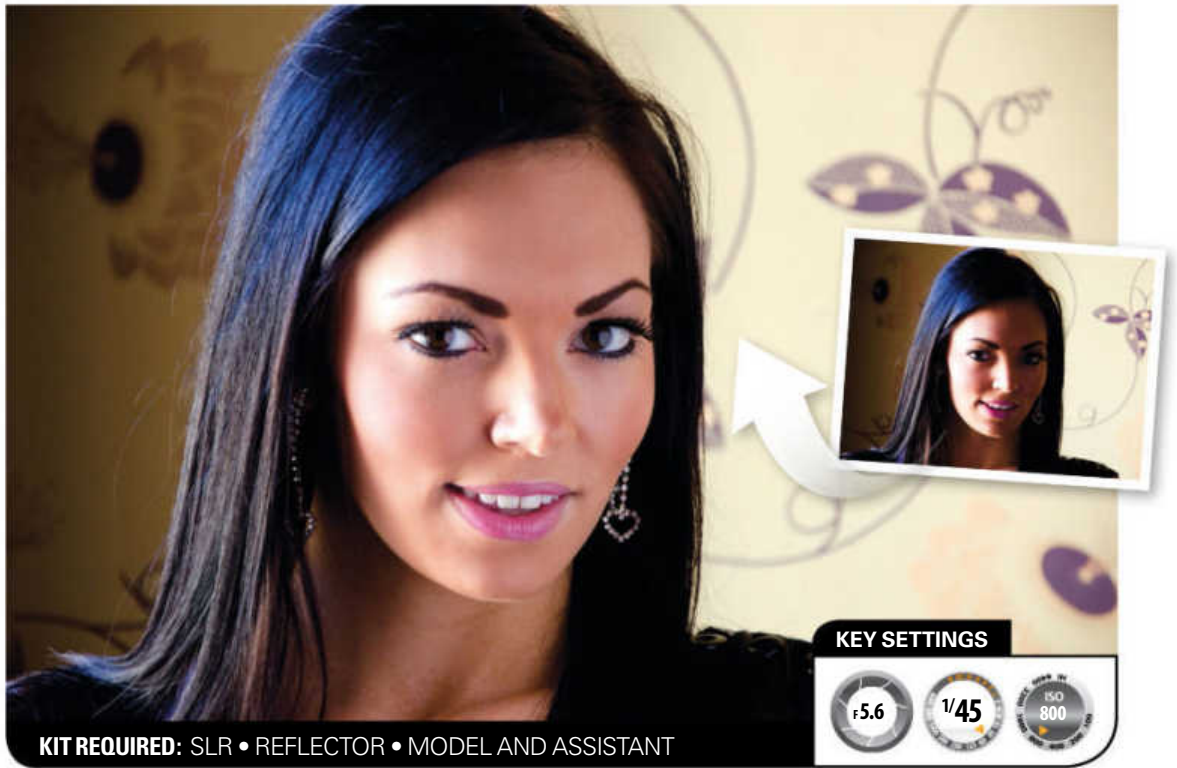
Forget spending lots of money on soft-focus accessories, here's how to get pleasingly soft portrait effects with nothing more pricey than tights

While it's possible to buy all manner of soft-focus filter attachments for your camera, all you actually need is a pair of tights. Simply take a pair of scissors, and carefully cut out an area large enough to cover the lens and extend down onto the barrel. Fix it down with an elastic band and start shooting. You'll need to get tights of the right thickness and take the colour into account, and be careful not to ladder the fabric, but that really is all there is to it. The fine net pattern of the fabric produces the soft-focus effect, as the

image is formed from the light that passes through the tiny gaps between the threads. This could be related to the diffraction (softening) effects you get when taking pictures with extremely small lens apertures.

There are two reasons why we really like this effect. First, there's no need to make any special adjustments to the camera settings – you can just fit the tights and shoot normally. Second, you can see just how your pictures will come out in the viewfinder as you shoot, and on the LCD display immediately

afterwards. To make the most of the hazy, soft-focus effect you get with tights, select Aperture Priority mode on your camera, choose a long focal length for your lens along with the widest available aperture. This gives shallow depth of field, so that the background is thrown out of focus. If the tights are a neutral colour, use Auto White Balance; if you use coloured tights, set a manual White Balance preset to stop your camera from trying to 'correct' the tint. Finally, remember to focus on the eyes, moving AF points as needed.



Using a reflector

Forget complicated lighting equipment – it's easy to get perfect window-lit people shots with nothing more complex than a reflector

A reflector will often give you all the control you need to achieve perfectly lit portraits. They are ideal for those situations where you've got a single, strong light source, such as a window or solitary lamp, and need to balance it by adding light from the other side so that the shadows don't appear too dense.

All you have to do is hold the reflector on the other side of your subject so it 'bounces' light back into the darker areas of shadow. If you're shooting a head-and-shoulders portrait, you might be close

enough to hold the reflector yourself. If the light is coming from the left, cross your hands over and rest your camera hand on your left wrist.

However, make sure you don't get so close that your subject's features get distorted. White reflectors are a good basic standby, but try other colours too. The gold reflector used for this image produces a really warm, rich tone, which will give paler-skinned subjects a healthy, tanned look. Some commercial reflectors have a silvered finish that gives a brighter, more sparkly light. Getting someone else to hold the reflector

makes a big difference. Not only does it leave you with both hands free to operate the camera, it also enables you to stand further back and use a longer focal length. This produces a much more flattering perspective for portrait shots. Look for catchlights, too – reflections of your light source in your subject's eyes. If you're careful, you can control the size of the catchlights by moving the reflector in and out. You can see them here on the right side of our model's eyes. One last quick tip: if you see overexposed 'hotspots' on your subject's cheek from the window, reduce the exposure.



KIT REQUIRED: UV LIGHTS • TRIPOD
• BLACK BACKDROP • UV FACE PAINT

KEY SETTINGS



All aglow with darklight

If you are looking for some really 'far out' effects, here's an easy guide to shooting a portrait with ultraviolet (UV) 'blacklight' lighting

The surreal effects of UV lighting are ideal for creative portrait photography, where props, clothes and make-up that react strongly to UV can be combined for psychedelic effects.

The first job is to choose your lights. You can get bayonet- or screw-fit UV bulbs for around £5 each, which can be used in normal desk or ceiling lamps, but strip lights work best. A 20W mains unit with a tube costs around £30 from Maplin (www.maplin.co.uk); ideally, you need two for a balanced effect. For the above image we used strip lights. As these are

designed for wall lighting, we attached them to studio flash stands using gaffer tape for ease of positioning. One was placed each side of our blonde model. A theatrical black backdrop was placed behind on a standard backdrop support stand. In a blacked-out room, the lights are weak, so you need to increase the ISO to at least 800 and open the aperture to f/4 or wider. Even so, exposures will typically be 1/2 sec to 1 seconds long.

Get the model to sit down on a stool, and hold as still as possible during the exposure. With such long exposures,

subject movement is common so you may have to delete lots of shots. Make sure you take lots of frames, so that you have some that are sharp. Zoom in to check when reviewing on the LCD. UV make-up and face paint is readily available at fancy dress shops, and is available in a huge range of colours. The bright glow that this produces under the lights means that you need to be quite subtle with the application to avoid these areas burning out in the photograph. Another good tip is to set white balance to Shade if using JPEG, or around 8000K if shooting RAW.

Double exposure

Create in-camera multiple exposures with the minimum of fuss – who needs Photoshop when you can do it all via menus...

Multiple exposure, where you layer one shot over another, is a technique that really suits portraits.

Many cameras now enable you to do it via their menus, so check in your manual or online. Once you have some images, select the multiple exposure option in the menu if available. Pick a couple of shots, and then look for a feature called Auto Gain, which will allow your camera to average out the exposure of each shot by itself, so they blend nicely. You can usually layer up any two subjects you like, as long as you take the shots consecutively. Then look for an 'image overlay' feature, which lets you create double exposures in-camera but doesn't limit you to consecutive images. Make sure you're shooting in RAW. When you've taken a few images, find Image Overlay in the Retouch menu, select two shots and adjust their relative brightness for your double exposure. Save your new image as a separate file. To take this technique further, try creating a cut-out effect. Select Multiple Exposure in the Shooting menu again, but leave Auto Gain off. You'll need to underexpose your portrait shot and shoot against the sky for a blown-out background. Next, take another shot of a texture, underexposing again. You should find that the model's face will 'frame' the texture.



KEY SETTINGS

KIT REQUIRED: CAMERA SUPPORTING
MULTIPLE EXPOSURES • MODEL
TELEPHOTO LENS • TRIPOD





Fiery wire wool fun

Get an assistant to hold burning orbs of wire wool – it's not as scary as it sounds and can create some really spectacular portrait effects

Here's a cool portrait project for a long dark night – shoot somebody spinning a ball of fire (wire or steel wool, actually).

Wire wool, often used in metalwork and furniture restoration, burns well and sends out brilliant sparks when spun. Set a long exposure and you can create some really memorable images. Once you have some steel wool (choose a thickness from 0000 to 00) mould it into an orange-sized ball. Get hold of a cheap kitchen whisk with a metal handle. Stuff your wire ball into the whisk, then hook a steel cable or

chain onto the end of it. Your assistant is now ready to start spinning (it's pretty safe so long as they wear long sleeves, tie hair back and protect their head). To set up your camera, switch to Manual for full control of your settings. A good starting point is an ISO of 200 and an aperture of f/8. The exposure time depends on how long your wire wool burns for – ours shot sparks out for five to 20 seconds, so we kept our shutter speed within that. A tripod is essential for long exposures, to keep everything sharp. If it's too dark for you to see your assistant, your camera's

auto focus will struggle to find them too. Have them hold a torch up to their face and use autofocus to find them, then switch your lens to Manual focus, locking the focus on them. When your camera's set up, ask your assistant to light the wire wool by rubbing a nine-volt battery on it or using a lighter. When the wool is smouldering, spin it and the rush of air will start the sparks flying. As soon as you see sparks, press the shutter button, asking your assistant to try different spinning techniques. Finally, boost contrast and colour in Photoshop if this is necessary.

Wire on fire

Create eerie portraits after dark using EL wire – here's how to get coloured flame effects like something out of a horror movie

Want to get ghostly with your D-SLR? This portrait might look complicated, but it's very easy and inexpensive.

All you need to start is a tripod, a remote shutter release and electroluminescent (EL) wire for spectacular results. Your location needs to be dark as possible and your model will need to be prepared to stand stock-still while you shoot a long exposure and use the wire to paint an electric fog around their body. To set your camera up for the shot, switch to Manual and select RAW+FINE in Image Quality. Pick a low ISO, such as 100, and an aperture of f/5.6. Tripod-mount your camera and then switch to B or Bulb mode so you can keep the shutter open for as long as you want (you'll need a remote shutter release to avoid camera shake). EL wire is powered by a mini inverter, which takes AAA batteries. Turn on the inverter and set it to Constant mode. When you're ready to shoot, press and lock your remote shutter button to start the exposure. Have your model stand completely still, and start whipping the wire around and behind them – don't paint directly in front of the model and don't get in the shot yourself. End the exposure when you are done. You can also try different colours, and include your model's features – light-paint their body with a torch or LED light before shooting.



KEY SETTINGS

KIT REQUIRED: REMOTE RELEASE • EL WIRE KIT • TRIPOD • REMOTE RELEASE TELEPHOTO LENS • TRIPOD

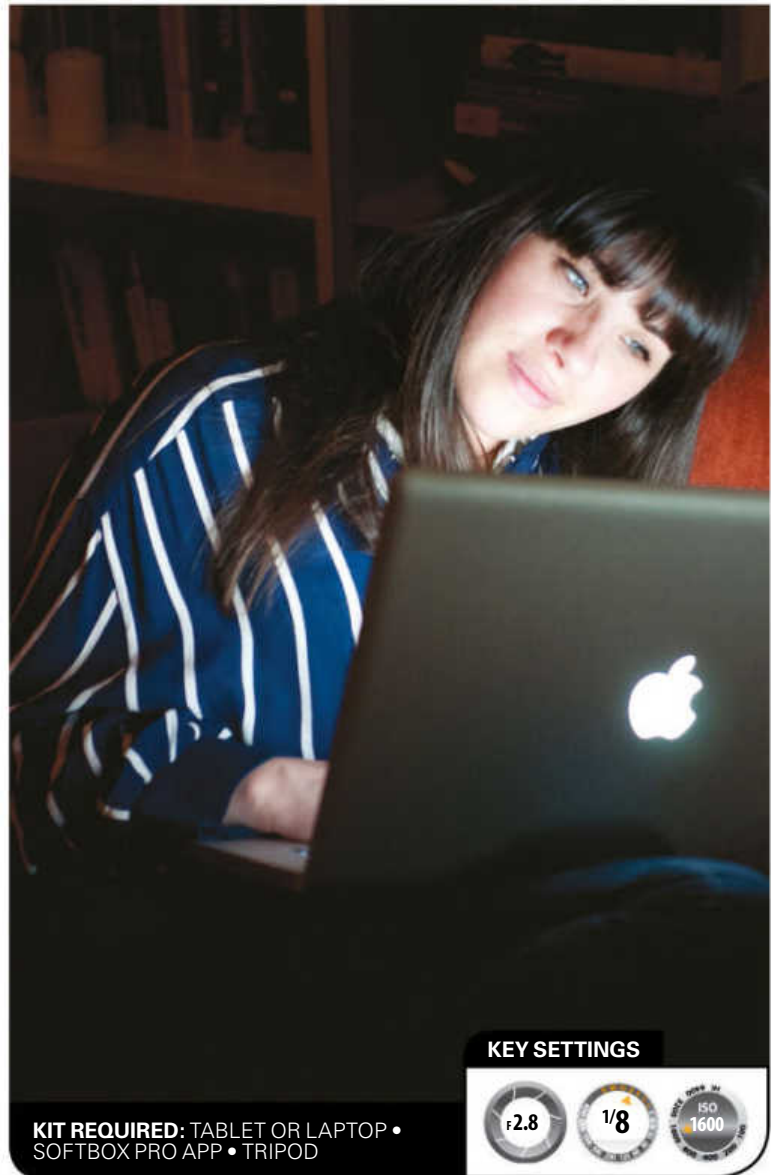


Light it with a laptop

Need more light? Here's how to use the LCD screen from a tablet, smartphone or computer for an attractive soft-fill effect

Did you know that you're carrying around a brilliantly versatile little softbox in your backpack?

Your tablet or laptop isn't just useful for editing and sharing photos, it's also easily converted into a light for illuminating portraits and still lifes. Plus, it's a lot cheaper and more portable than expensive, heavy lighting systems. Laptops put out a lot of light, especially in a darkened room, and using a program like Microsoft Paint or our favourite lighting app, Softbox Pro (£0.79), you can open up a white screen that will act as a light source in the same way as a softbox does. For a nicely lit portrait, you'll need to shoot in a darkened room so that the tablet's light is the only thing illuminating your model. Use a tripod for stability and pick a high ISO to compensate for the low light. We used a shutter speed of 1/8 sec and created a shallow depth of field with an aperture of f/2.8. Set your tablet at an angle to the model's face and adjust the angle until you get an effect you like. This technique works just as well with a laptop screen. To go further and add a cute catchlight in the eyes, load a white shape, such as a star, against a black background onto your screen, and use this to light your model's face – the shape will be reflected in the catchlight. For a really striking close-up, use a macro lens at f/2.8 to focus in on your model's eye.



KEY SETTINGS



KIT REQUIRED: TABLET OR LAPTOP •
SOFTBOX PRO APP • TRIPOD

Out of the shadows

Create weird and wonderful shadow silhouettes, using nothing more complicated than a lamp or video light, a model and props

Playing with shadows is a fun, creative and even spooky portrait project and you can use a bright lamp indoors if it's an overcast day.

You need to shoot against a plain light-coloured wall, and avoid getting any distracting clutter in shot. To cast your shadows, you'll need a willing model or two, and some props. The closer any object is to the light source, the larger it'll appear on the wall, so experiment with perspective for surreal shadow shots. To get a strong shadow on a surface that's bright but not burnt we shot in Manual with an ISO of 800, an aperture of f/8 and a 1/125 sec shutter speed. It's easiest to shoot handheld. Shoot in RAW+Fine and switch your Picture Control to Monochrome for a dramatic look. Have your model stand between the lamp and the wall and take a few test shots, adjusting exposure as needed. If your camera struggles to focus, switch to Manual focus and check that the edges of the shadow are sharp. When your shots look good, start experimenting.

If you've got more than one friend on hand, have them interact. Be careful that their shadows don't merge on the wall, though, or they'll become a dark, indistinguishable mess. If you can't rope anyone in to help, use the self timer and a tripod to create a shadow by yourself. This project is a lot of fun!



KEY SETTINGS

KIT REQUIRED: LAMP OR VIDEO LIGHT
• MODEL • SUITABLE PROPS
TELEPHOTO LENS • TRIPOD



Caricature class

If you think your wide-angle lens is only good for landscapes, think again – you can also use it to make fun, creatively distorted portraits

Wide-angle portraits play on the natural distortion that wide lenses produce. 'Barrel'

distortion causes otherwise straight lines to appear bulged if they don't pass through the centre of the image. This effect is more marked at the edges of the frame, and barely noticeable in the centre of the shot. Normally you'd avoid distortion, but by exaggerating the effect you can create a caricature-style shot. Just choose a wide-angle lens, and find a subject who doesn't mind being experimented on! When it comes to distorting reality, the wider your lens the better, so a 10-20mm super-wide-angle lens is ideal. You could use an 18-55mm kit lens, but the distortion won't be as pronounced and you'll need to exaggerate your angles even more to get a cartoon-like look.

You won't get a shallow depth of field with a wide-angle lens, so a distracting or busy background can take away focus from your subject if you aren't careful. Choose a plain wall or urban setting to keep things simple. Experiment with angles for different effects, while staying close to your subject.

Placing the centre of a face in a corner of the frame will make features look disproportionately huge, while extremities like hands and feet that are further from the lens will look weirdly small. Try this technique with pets and kids too.



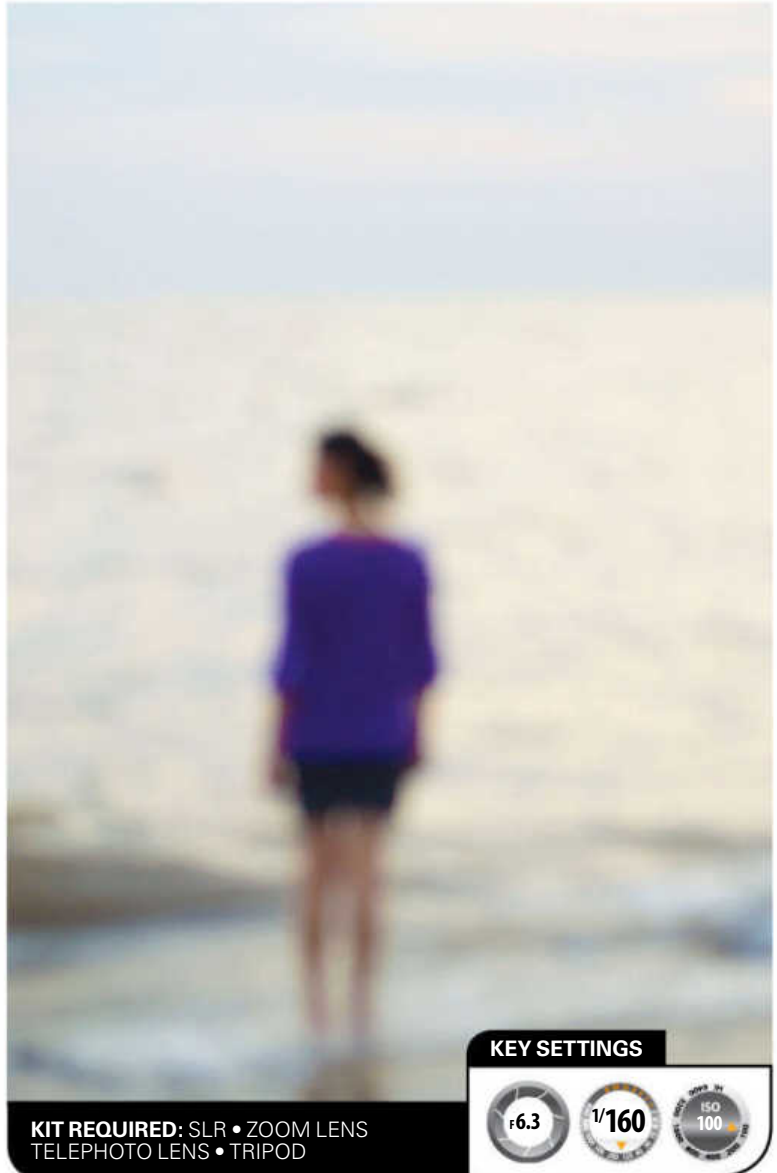
Fuzzy with the focus

Who says every portrait needs to be pin-sharp? Lose the focus and win with this easy guide to dreamy, artistic effects

Deliberately defocusing your images can create dreamy, artistic photos. You don't need any special kit; just a location that offers a variety of subjects to experiment with.

The main pointers for a successful defocused shot are to pick a simple subject – choose something with a strong, easily recognisable silhouette – and to avoid cluttering your shot, as a busy scene will just look confusing when out of focus. You'll use the same settings whether your subject is in focus or not, so take some shots in focus as you would normally and find a composition that you like. We were shooting on a cloudy day, so we used a shutter speed of 1/160 sec, aperture of f/6, and an ISO of 100. Switch to manual focus, and focus on a point well beyond (or in front of) your subject. Review your shot on the LCD to see if it looks right: too fuzzy and it will become a pointless blur, so find the focus point that creates a dreamy feel while still letting you recognise the subject. Once you've shot your subject, scout about for more scenes and objects.

Bold architecture and people in silhouette look especially good out of focus, though it's worth noting that if you defocus shots of people too much, their bodies can take on an elongated, alien look. This might be to everyone's taste!



KEY SETTINGS

KIT REQUIRED: SLR • ZOOM LENS
TELEPHOTO LENS • TRIPOD





KIT REQUIRED: SLR • FLASHGUN MOUNTED OFF-CAMERA

KEY SETTINGS



Low-key atmosphere

How to master this essential technique for moody portraits with lots of drama and atmosphere – it's a great tool to add to your arsenal of skills

Low-key lighting makes the most of dark tones and shadows to create images with drama and atmosphere.

The backdrop needs to be mostly hidden in the shadows, while particular features on the subject are illuminated. So when you're shooting low-key portraits you don't need much in the way of lighting kit – a single flashgun mounted off-camera will be adequate. With low key portraits, you want to eliminate as much of the ambient light as possible, which you can do by narrowing your aperture; a fast shutter speed would achieve the same

effect, but on cameras the top flash sync speed is either 1/200 or 1/250 sec. When you expose for the ambient light you don't need to worry about underexposing your subject, as the flash will illuminate them – you can simply adjust the flash power as required to expose them correctly. Set a low ISO of 100 for noise-free shadows and set your shutter speed to the maximum flash sync speed, which is 1/200 sec or 1/250 sec. Start with a wide aperture value, such as f/5.6, and take a test shot. You then need to set the camera's pop-up flash to trigger the external flashgun. Set

the flashgun to Slave mode (refer to your manual for how to do this), and make sure your camera and flashgun are set to the same channel so they can communicate. Set your flashgun to Manual, and place it in front of your model as required. Set the power to one-quarter to start with, take a test shot, and increase the flash power if your model appears underexposed. If some of the background is illuminated and your subject is still underexposed, increase the flash power and move the flashgun more to the side of your subject, so that less light is falling on the backdrop.

High-key creativity

Discover how to shoot portraits that are dominated by light for professional-looking results, and don't need lots of gear

The term 'high key lighting' means images with a bright, airy look that are dominated by light tones, usually with a blown-out

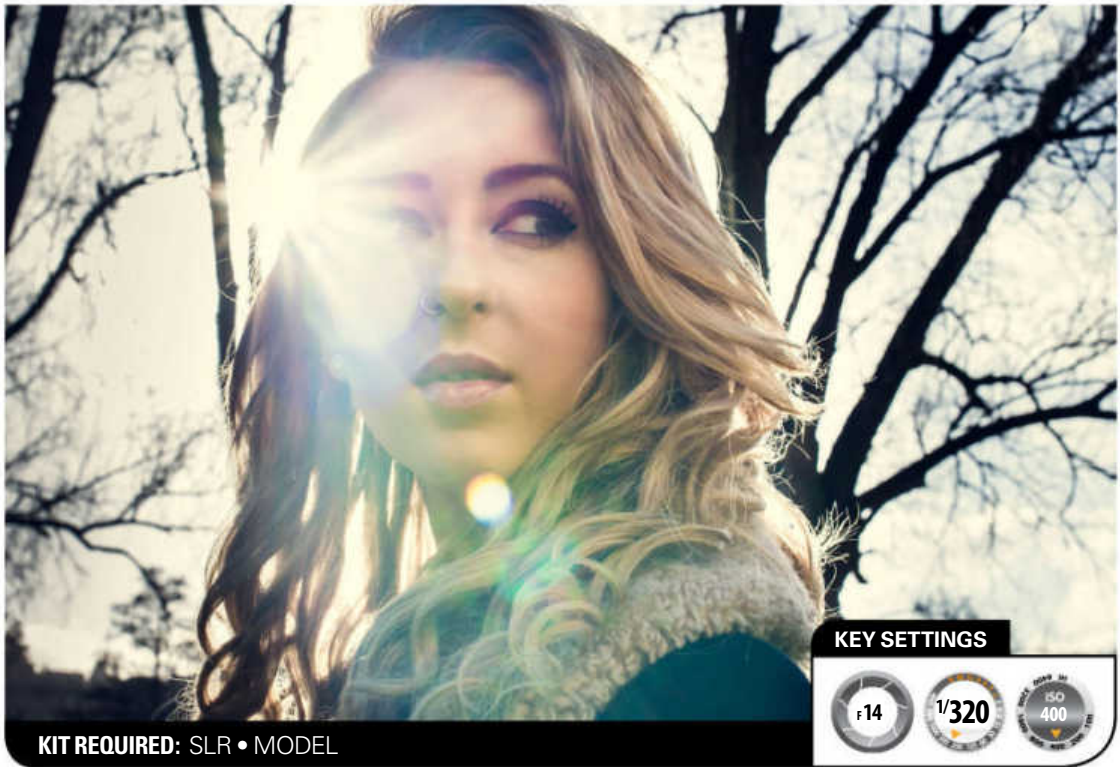
background. All you need is a white wall and a pair of flashguns. To get the high-key look we simply need to overexpose the background, so that it comes out brighter than our subject, which is easily done with two flashes. Train one on the subject, with the other angled towards the background at a higher power setting. Of course, we need to be able to trigger the flash off-camera; it helps if one is compatible with your DSLR's wireless mode, as you can trigger it with your pop-up flash. The second flashgun need not be compatible, as long as it's got an optical slave mode. Attach one flashgun to a stand or tripod and position it directly behind the subject, pointed at the wall. Ensure that your model obscures the stand when you shoot. Set your second flashgun in front of your subject from slightly above the face. For flattering results with flash, it's a good idea to diffuse the light and soften the shadows, either with a shoot-through umbrella, or by bouncing it off a wall or ceiling. Set Manual exposure mode for full control, with ISO100 and shutter speed 1/200 sec. Choose a wide aperture, such as f/5.6, then take a few test shots, changing the power of the front flash until the exposure looks right.



KEY SETTINGS



KIT REQUIRED: PAIR OF FLASHGUNS
• WHITE WALL OR UMBRELLA



Sunshine secrets

The sun can be a great friend in photography but a dangerous enemy. Here's how to get the best results when it's your light source outdoors

The sun is a wonderful light source for portrait photography, but you need to use it as carefully as you would use an artificial light source like studio flash.

When shooting subjects with the sun behind them, it helps if the sun isn't too high in the sky, so shoot in the mornings and evenings when the sun is lower (especially in autumn and winter). At the day's beginning or end sunlight becomes more diffused because of the angle of the earth's atmosphere, so the light is softer. Don't position your subject so that direct sunlight falls on their face.

Hard light from the sun creates too much contrast, with hard, deep shadows. It can also lead to squinting and unflattering expressions. If possible, look for the shade of a building or tree, or try changing position so that the sun is behind the subject instead. When the subject has their back to the sun it creates an attractive halo effect around their hair and body. But that light edge is only visible in our shot because there's a dark object behind our subject. When they're set against a light area, we don't get the same kind of separation, so if you want the subject to jump out of the

image, position them so that there's a shady area in the background.

Although flare is often seen as a mistake, sometimes you can use it creatively to add to the mood of the image. If you want to show some creative flare, the best times to do so are when the sun is low in the sky in the morning or evening. Use aperture-priority mode and close the aperture down to f/16 or lower. This'll give the sun a nice pointed star shape. Don't shoot directly at the sun; have it creeping into the corner of the frame, or poking out from behind your subject's body.

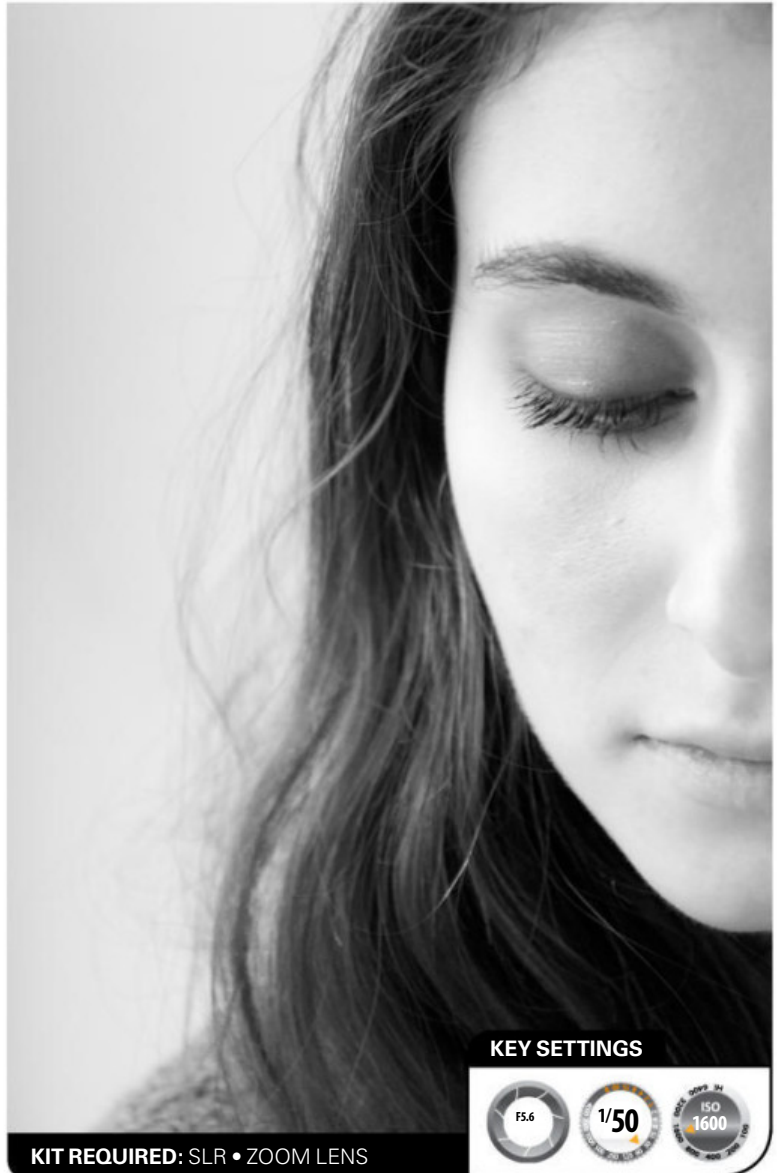
Extreme framing

Discover how to frame tight on faces for a creative take on portraits – you need nothing more than a camera and zoom lens

Want to add a oomph to your portraits? It's time to break the rules, to crop in close and play around with framing.

While you want to avoid conventional composition, some norms of portrait photography are still helpful, such as using natural window light where possible and focussing carefully on the eyes. If you're shooting indoors or on a cloudy day a reflector will brighten things up by bouncing the light back on your model's face. A white one will get rid of shadows, while gold will warm up skin tones. You could even make one by using a large piece of white cardboard.

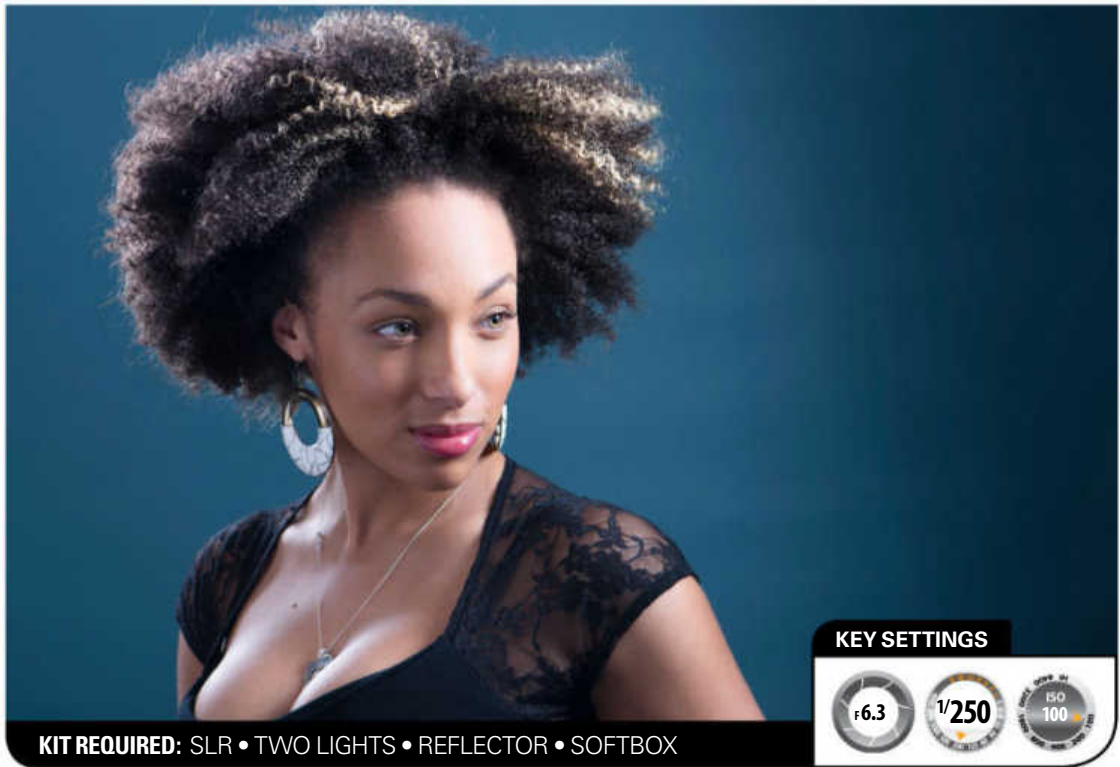
It's easiest to shoot handheld, so that you're able change your position and reframe quickly. To compensate for any shakiness and keep things sharp pick a high ISO, such as 1600. It's easiest to shoot in Aperture Priority mode, letting the camera pick its own shutter speed. Start by framing a shot around your model's eyes, or try zooming in on their mouth – these are great ways to get in close but still show emotion, as lips and eyes are very expressive. Or play with what photographers call 'negative space'. This is the empty area of a photo, and it serves to add interest and draw more attention to your subject. To finish, why not place some of the images in a diptych or triptych arrangement for hanging?



KEY SETTINGS



KIT REQUIRED: SLR • ZOOM LENS



Lighting for fashion

Master these essential but achievable lighting skills that will enable you to take fashion and beauty portraits with pizzazz

When it comes to shooting fashion beauty portraits we invariably want to flatter the subject, so an effective way to do this is to shoot them in soft light.

When shooting in daylight, it's a common misconception that bright sunlight is best. The problem with sunlight is that it creates high contrast and hard-edged shadows, which isn't kind on faces. We need to reduce the contrast with softer light.

Forget the sun: a cloudy sky is much better for portraits. Clouds act like giant diffusers, creating softer light that fills in shadows and reduces contrast. If there

isn't a cloud in the sky, use a reflector or a piece of card to shade the person's face, or go and find a better spot in the shade. When using flash in your portraits, you can transform the small harsh light from a speedlight into a bank of soft light by bouncing it off a wall or ceiling. Better still is a home studio kit, which enables you to position flash heads where you like, then use softboxes and umbrellas to produce soft, flattering light. When you're using softboxes or umbrellas, the larger the size of the source, the softer the light will be. A reflector is another essential accessory,

to bounce light back on the face. Try applying cross-lighting to your subject too, with one light in front and to the right, and a second light from behind to the left (as in the image above). Don't forget camera height, either, which has a big effect on the look of a beauty portrait. A portrait shot at eye level creates a subconscious connection between viewer and subject, and a sense of empathy. Above eye level emphasises the face and makes people appear slimmer (and also more vulnerable), while lowering the camera makes the subject seem taller and bolder.



Outdoor fashion

Some tried and tested secrets for taking more effective fashion portraits outdoors, and getting the most from your model

Shooting fashion images in an outdoor environment has a lot more potential pitfalls than being in a studio. Not only is the light constantly changing, but you also have to be able to find the right location to shoot in. This can bring added stress, because you'll have to deal with messy backgrounds and the possibility of people walking right through the middle of your set! As with so much portrait photography, it's really important to build some rapport with your subject. If your model is a relation or a close friend who's only used to being snapped in the

pub, then it's best to choose a quiet location; to start with try to find somewhere away from crowds, such as a secluded area of park land. Take charge of the shoot. Be confident. Know your gear. Use a zoom lens to give you a range of shooting options, enabling you to crop tighter and remove distractions, or step back and go wide to show your model against a gritty, interesting background. It also means you won't need to change lenses mid-shoot. Don't check the LCD after every single frame either – keep glued to the viewfinder, talk to the model and keep shooting. To ensure dynamic

fashion portraits outside, a great tip is to vary your focal length; wide-angle lenses give creative and fun effects while zoom lenses give more natural images. Experiment with different perspectives, too. Get high, get low and even try tilting the camera. As with this image, gritty urban backgrounds can add a lot of character to a portrait, and ask your models to bring a few items of clothing that you can mix and match throughout the shoot. Keep checking the histogram too, as outdoor light can change quickly and be unpredictable. Avoid blowing out highlights at all costs.

Baby it's you...

When taking baby shots to treasure for a lifetime, you can choose between capturing close-up detail or some really cute interaction

One of the problems with babies is deciding what sort of shots you intend to capture. For instance, do

you focus on close-up detail shots, only concentrating on their main features such as the hands, eyes, feet and mouth? By using a macro lens, you'll be able to get within centimetres to capture the delicate detail in their features. Also, by using natural light from a window, along with a reflector to fill in shadows, you'll get a lovely, soft illumination. The more light you can get onto your subject, the lower ISO rating you can set on the camera, enabling you to produce a higher-quality image.

Get down to the baby's level, open up the aperture to a wide setting and shoot from an angle to fade out both the foreground and background. Try using a black sheet to transform your portraits from the clean, crisp images that occur with a white backdrop to 'deeper', more atmospheric shots. The black sheet won't be reflecting any light onto the baby's face and shutter speeds may drop – bring the gold reflector closer to the child to compensate. Last but not least, don't forget to include the parents – a classic shot to get in the bag is the baby gripping onto the mum or dad's finger. It can really add a sense of scale. Another good tip is to bring along plenty of props, toys and favourite blankets to keep the little ones settled and occupied as you shoot.



KEY SETTINGS



KIT REQUIRED: SLR • ZOOM LENS •
MACRO LENS • BLACK SHEET

Band group shots

Keen to make your name as a music photographer? Photographing local bands is a great way to hone your skills and build a reputation

A great way to get started as a music photographer (and hopefully make a bit of money) is to shoot bands, especially local ones after PR.

Shooting bands is a great excuse to get creative. If you've been looking for an excuse to get that fish-eye lens in action, band photography is as good a place as any to put it to use. By staggering the positions of the band members you can give your shots real depth, as well as contrasting them with an interesting background. An ultra-wide or wide-angle lens can still give you loads of frame-filling impact. Another essential shot for any band is the line-up picture. Getting down to ground level and shooting up with an ultra wide-angle is a cool way of creating perspective with impact. In terms of camera settings, your choice of aperture, and the depth of field it delivers is the most important setting to get correct when shooting groups. By placing people in the foreground and having space between them and those in the background, you run the risk of not having everyone in focus. Sometimes this can be exactly what you want. But, by using an aperture of f/8-f/11 and placing the lead singer in front and the rest about four feet behind, you can keep most people in focus while also adding depth. Keep an eye on your shutter speed as you move to smaller apertures, and watch for overexposure if some members of the band are wearing dark clothes.



KEY SETTINGS

KIT REQUIRED: SLR • ZOOM LENS
FISHEYE LENS • WIDE-ANGLE LENS





Point of view

Give your travel and action photos a fresh perspective with a dynamic first-person point of view

Point of view or first-person shots are fun to photograph, and make great additions to your travel albums. They're also great for sharing what you're up to without taking a selfie. There's no need to invest in a GoPro sports camera – with an ingenious SLR accessory you can get brilliant images of your adventures. It's easy to get started. Shoot your hands and feet in different situations, such as patting a dog, dangling over a wall or buying an ice cream. At such close range, a super wide-angle lens is a big help for getting everything in shot,

but you could use your kit zoom lens at its widest zoom setting instead. Hands-free shots require a bit more preparation, but with the right equipment you'll be able to take a shot of yourself performing any activity at all.

Photographing your feet or just one hand is easy – you can simply point and shoot. If you want to include both your hands, hang your camera around your neck, switch to Live View and compose the shot, then use the self-timer to get your hands into the position you want. If you want to shoot sports then you'll need to keep your

camera stable. Get hold of an SLR chest strap, which wraps around your waist and holds the camera snug against you. They cost around £20 (\$35) on eBay, or you could make your own from some stretchy material.

The aim of a shot like this is to keep your hands in focus while the rest of the scene slightly blurs, creating a sense of speed. Switch to shutter-priority mode and pick a speed around 1/300 sec, then select the interval timer and start shooting. With a large enough memory card, you'll have plenty of shots to choose from.



KIT REQUIRED: SLR • ZOOM LENS • FLASHGUN • GOBO • PHOTOSHOP

Film-noir portrait

Apply cool film-noir styling to a portrait using a few props and some simple tonal adjustments in Photoshop

With a few simple props and adjustments to tones in Photoshop, you can turn an ordinary portrait into something resembling a still from the golden age of movies. Yes, we are talking film-noir, and this moody effect is created by converting the image to black and white, then making subtle toning tweaks. First, capture your portrait with your model styled appropriately, using a period hat and coat. Light the model using a 'gobo' to create the blinds effect.

A gobo is an object that comes between a light source and the subject that changes the characteristics of the light. You can buy one of these, or make your own out of cardboard. Load your portrait and go over to the HSL/Grayscale panel and click Convert to Grayscale, then set Oranges to +15 and Yellows to +30. Click OK to return to Photoshop. Make a new layer and grab the Gradient tool. Set the colour to black, and choose Foreground to Transparent. Then drag in from the edges to darken them.

When retouching faces, it's useful to think of the face as a set of areas that each need a separate adjustment. For example, areas of skin might benefit from softening, while eyes could usually use a boost in sharpening and contrast

Family portrait grid

Shoot a selection of expressive, action-packed portraits to produce a colourful and candid photo montage

Photo grids are a fantastic way of displaying a collection of portraits.

You can download both grid templates and software for creating grids from the internet, but it's easy to create your own in Photoshop. Shoot your headshots against a plain background so that they're easy to cut out. Ask your subjects to wear brightly coloured tops – you can then choose backdrop colours to contrast with these. Talk to your subjects and make some jokes to put them at ease, so that you can capture more natural-looking shots. Set your camera to aperture-priority mode, and set the aperture to $f/5.6$ to ensure your subjects' heads and shoulders are in focus. Keep an eye on your shutter speed. Anything slower than $1/60$ sec may result in blurred images. Get your subjects to strike a range of poses and expressions, looking in different directions, so you have plenty of options for your grid.

Open the images in Photoshop and use the Quick Selection tool to select the background. Go to Layer>New Fill Layer>Solid Color and click OK. Choose a colour from the Color Picker, then drag the Fill layer below the cut-out layer. Repeat for all 12 portraits, create a new document, and place the portraits in a grid pattern. Reposition and resize each shot as required once they're in place, making sure everything lines up.





Natural child portrait

Photographing kids is challenging but rewarding. Learn how to capture the magic of children at play the natural way

Capturing the magic of an exploding smile, the emotion of a child in thought or the expressiveness of a mischievous grin far outweighs the risks of tears and tantrums. Forget about formal settings and posed shots. Those aren't the ideal situations for taking shots of children that also express their personalities. For a natural look, create a relaxed and casual environment in which children can simply play and be themselves, and while they're playing, capture some candid images. This is a great way to capture natural expressions,

and the children won't get so frustrated with adults pointing cameras in their faces or shouting at them to "say cheese".

There's an art to successfully capturing a real winner. You need to make sure you've got the right location for photography as well as for play, and that your camera and equipment is ready to go because the children won't wait for you to tweak your settings and setup. Natural light is the best, so try to create a shooting environment outside using available light. The settings you'll need are similar to those you'd use for shooting sports or

action. Use a fast shutter speed (such as 1/125 sec or faster). If you have to increase your ISO to 400 or 800, do so. A wide aperture such as f/2.8 helps you to achieve a fast shutter speed and creates a shallow depth of field, which will throw the background out of focus. Switch your camera's shooting mode to Continuous. Keep the button pressed to fire several shots in succession and you'll be more likely to capture a winner. It's usually a good idea to use exposure compensation. About half a stop overexposed retains light and detail in the shadows.



Environmental portrait

Environmental portraits are photos of people in their everyday surroundings that 'tell the story' of your subject at work or at play

The aim of an environmental portrait is to include things that tell us something about the person, and the background becomes their 'back story', so you need to show details and objects that help to explain who they are and what they do. For this image we photographed a talented glassblower as he produced one of his beautiful and delicate creations. We began the shoot by taking some candid shots while observing the glassblowing process. Most of the work of shaping the glass was done on the bench, so this

is the setup we chose for the portrait, with the glowing furnace in the background.

When going into an unknown environment like this, it makes sense to start out by observing for a while, looking for interesting angles and details. Set your SLR to aperture-priority mode, and increase the ISO until your shutter speed is up to 1/200 sec or faster. Look for good spots of light, such as next to a window or door, and if the light isn't right, add some of your own. After shooting a few candids, settle on a composition and set up an off-camera flash. For this image we positioned a flashgun off to the right of

the camera, and used the camera's pop-up flash to trigger it.

You need a good line of sight, so make sure the sensor on the front of the flashgun is angled back towards you. The key with using off-camera flash is that rather than changing the exposure to suit the power of the flash, we change the flash power to suit the preferred exposure. So first set the camera to manual, and fire a couple of test shots without the flash to work out an exposure for the background. Then pop up the flash, and work out a power that exposes the subject correctly.



KIT REQUIRED: SLR • REMOTE • SUCTION MOUNT • ND FILTER

KEY SETTINGS



Action-packed drivers

Take action-packed shots of a driver without getting out of first gear – here's how to get petrolhead portraits with the car at walking pace

With a little ingenuity and some simple techniques you can create the illusion of speed with the car

travelling at walking pace. This technique, known as a 'bolt-on', involves attaching the camera to the car and then using a long shutter speed to blur the background so that it looks like the car is travelling at speed. The first task is to find a safe location to take your shots.

You'll need a location where there aren't any other vehicles, such as a dead-end road. You'll also need a smooth surface, because any bumps will cause

the camera to move, creating the wrong sort of blur. Some objects fairly close to the car will create the right sort of blur and give a sense of speed.

Use a dedicated mount such as the Delkin Fat Gecko to mount the camera around 30cm from the car. You'll need to use a shutter speed of between one and three seconds to get plenty of blur, so before attaching it to the car, hold the camera roughly in position and check the exposure. If it's too bright you'll need to attach an ND filter to the lens to reduce the exposure. Once the camera is attached, check that it's totally secure.

Once you are happy with the set-up, get the driver to move the car slowly and smoothly while you fire the camera using a remote. You can trigger the camera from a distance, but try to stay close to the car to keep a watch on the camera and mount for any movement or loss of suction. Once you've got some straight shots, try different effects. You could set the camera at an angle to get a more dynamic composition. Also, if you have space around the car you can shoot when the car is turning to give a curved shape to the blurred background.



Take to the water

Discover how to keep your costly camera and lens safe at the seaside, using simple and inexpensive underwater housings

Water and cameras don't usually mix. However, there are a wealth of options available to help you take

pictures underwater without

wrecking your camera. At the top end of the market you can get pricey hard cases, but a more wallet-friendly choice is to use a soft case like the ones from Aquapac or Dicapac. These have a cylindrical space for your lens, fronted by a hard, clear plate. Your D-SLR sits in the bag, and you can press buttons and access controls through the soft material. All bagged up, here's a quick guide to

getting great portraits at the beach (a risky place for an expensive camera...) Before you submerge your expensive D-SLR, it's worth checking that the seams are water-tight and the locking mechanism is secure. An easy way to do this is to put some tissue inside the case, then lower it into the water. If the tissue stays dry, then you know your camera will too. Once your camera's in the bag you don't want to have to take it out until necessary, so make sure the battery is full, the memory card empty and the lens cap off. Use whatever exposure settings you're comfortable with; we

used Aperture-priority mode set to $f/5.6$ and ISO200. One of the biggest challenges when shooting in the water is to get sharp shots. For this you need to be able to focus precisely. Set the AF to continuous so it engages constantly. It can be tricky to half-press to focus, so try setting back-button focusing. Also, experiment with angles. You can go underwater if it's clear enough, or shoot along the surface for a view of the waves. Lastly, try shooting from the sea back towards the land, as in our main shot. This is the kind of angle you don't see that often, so it stands out.



Model portrait skills

Celebrate your inner child by shooting macro landscapes for micro people – creating landscapes is limited only by your imagination

For this fun project you'll need to find some miniature figures (try 00 gauge models from www.gascupboard.co.uk) and think about creating a landscape. Take a look at macro-world photographers Akkio Ida and Pierre Javelle if you need some inspiration. As the figures in this kind of composition are so small, you will need to shoot with a macro lens. You could improvise with different lenses and crop in, but you will then lose lots of detail. Then, set a narrow aperture. Yes, you want a shallow depth of field to blur the background, but at this range, f/2.8 will

blur out most of the scene. This image was taken at f/18 and still has a shallow depth of field. Next, get low down and level with your scene as this creates the illusion that the toys are the same size as the viewer. It helps to shoot on a table or a ledge off the ground. Focussing can be another challenge with this kind of project. Autofocus isn't ideal, as the focus point may not sit where you want it. Instead, attach your camera to a tripod, and use Live View to focus manually for greater precision. Whatever background you decide to use for your models, ensure it isn't too obvious. Shooting towards the

sky is often the best backdrop for realism. If you cannot get a clear background, use a piece of material such as blue T-shirt, or some coloured paper. Position this far enough back to be completely blurred to a flat colour. Natural light will work for this project, though artificial lighting is more controllable. Indoors, a desk lamp is ideal for most still-life shoots, and can act as a sun if it's fitted with a tungsten bulb. This can also be done effectively with a flash and a gold reflector face. Remember to use a tripod to keep your composition in place while you adjust the various figures and props in the scene.

Face to face

Here's an example of a stylish double-exposure effect for portraits, which you can either do in-camera or in Photoshop

Back in the days of film, creating a double exposure was a hit-and-miss affair; now all you need is a D-SLR that can blend multiple exposures in-camera. If your camera can't, try it in Photoshop. Simply copy (Ctrl+C) and paste (Ctrl+V) one shot onto another, and experiment with the blending mode drop-down menu at the top of the Layers panel). To keep it simple we're creating a double-exposure self-portrait here, something which is a lot easier with an assistant – either to pose for you or hold lights while you pose. Use dark fabric that will soak up the light and avoid stray reflections. Your settings will vary depending on your set-up. Here we used a 50mm lens and two continuous lights. To keep the ISO at 100 for a noise-free image we opened up the lens to f/2, and we used a relatively fast shutter speed of 1/160 sec. If your camera supports it, select multiple exposure mode. Choose the number of shots – two in this case. Mount your D-SLR on a tripod, and either use the self-timer setting to give yourself or your subject time to prepare for each shot, or, if you want to time the shots precisely, use a remote shutter release. Use a lighting style that creates distinctive light and shade. Strong side-lighting is effective, with or without a reflector to bounce some light into the shaded side; just be sure to use a rimlight to separate your model effectively from the background.





Tricks with mirrors

Three starter images and some Photoshop ingenuity are all you need to create this striking and enigmatic mirror image

Reflections are a ripe subject for photographic trickery.

To create this kind of mirror image that couldn't possibly have occurred in real life is easier than you think, and it all begins in-camera.

As with our example, you will need three images. In the first, the subject holds the camera with one hand, and stretches the other out to the surface of the mirror. In the second, he switches hands in order to capture the other arm stretched out. And in the third, he holds the camera below his chin to capture his face. If you plan to shoot your own images for this, keep your

camera and body position as fixed as possible so that everything can be aligned. Shooting somebody else is probably a lot easier, as however good your Photoshop skills, the quality of the original source imagery will make or break this kind of project.

Once you've opened these images in Photoshop, all you have to do is combine the arms and head to create a seamless composite that makes the camera invisible. This is easy enough using layer masks, selections and a little cloning to tidy things up. Another important step is to add a tonal

change at the end of the project. This will help to make all the separate elements look like they belong together, and a slightly desaturated, cinematic look is ideal for an effect like this. A great place to do this is in the Camera Raw Filter (Photoshop CC only). Once everything is in place, hit Cmd/Ctrl+Shift+Alt+E to merge layers, then go to Filter>Camera Raw Filter. In the Basics Panel, add Clarity and increase the Shadows. To give it a cool tone, drop the Temperature to about -10 and then increase Vibrance and decrease Saturation.



CHAPTER 3

Field guides

Learn how to shoot in almost any
situation using these foolproof
step-by-step flow diagrams

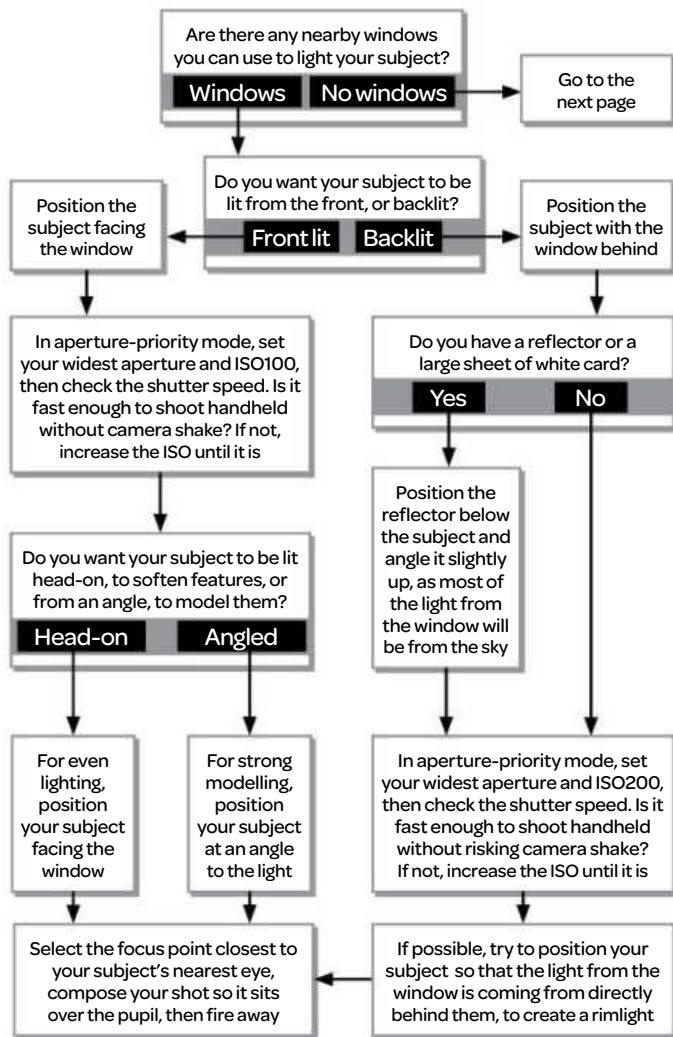


In this section

- 104 _ Indoors with natural light
- 108 _ Indoors in poor light
- 106 _ Portraits in daylight
- 107 _ Outdoors with flash
- 108 _ Focusing
- 109 _ Moving subjects
- 110 _ Metering dark subjects
- 111 _ Metering bright subjects
- 112 _ Metering for highlights
- 113 _ Portraits after dark
- 114 _ Weddings: the bride
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- 116 _ Weddings: the couple
- 117 _ Weddings: the guests

Indoors with natural light

A window and a reflector are all you need to shoot beautifully lit portraits indoors



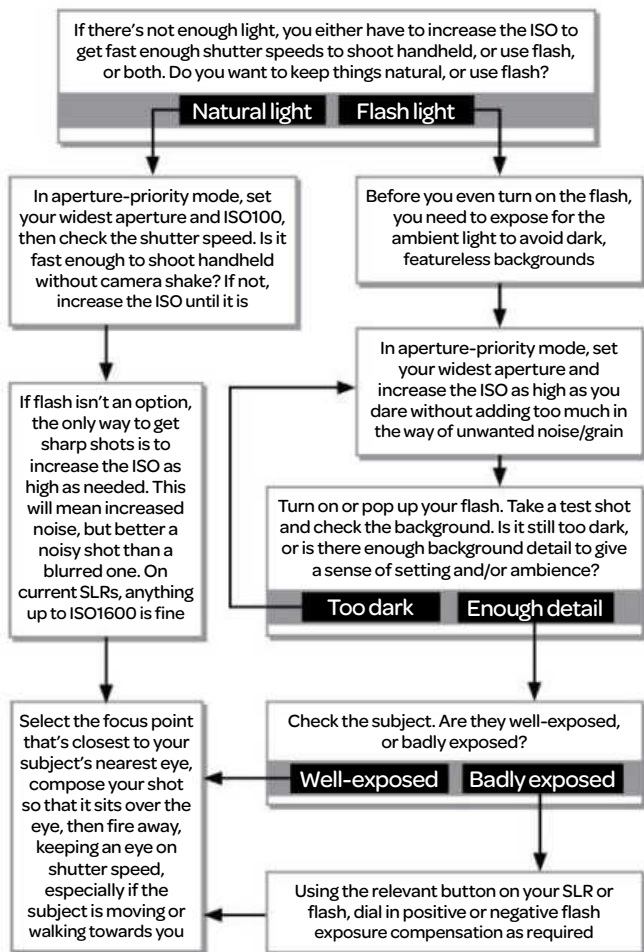
Where you shoot depends on the style you want to use, the time of year and what you want to achieve. But starting inside is a great way to get everyone accustomed to your camera.

If the room feels cramped around your subject, try placing them in a corner and shooting from a low angle. This vantage point gives a greater emphasis to the lines where the floor meets the walls, which will travel from one central point out to the lower corners of your frame, giving the exaggerated appearance of open space. Using a wide-angle lens for this type of shot will enhance the effect even further.

Indoors in poor light

In gloomy interiors, you need decide to whether you use flash and ambient light

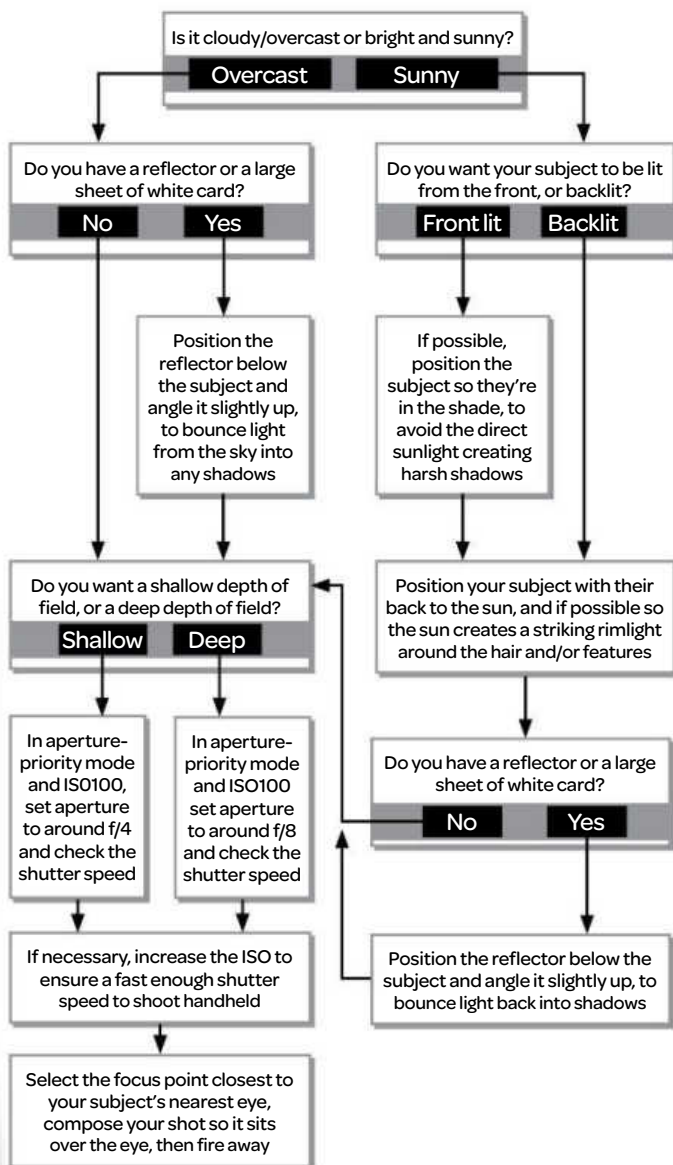
Position yourself close to a window for lovely, soft illumination, and use a reflector to fill in any shadows. The more light you can get onto your subject, the lower ISO rating you can set, enabling you to produce a higher quality image. If you really have to use flash, another option is to use a flash diffuser: the bigger and softer the diffuser, the less noticeable the flash burst will be.



Portraits with daylight

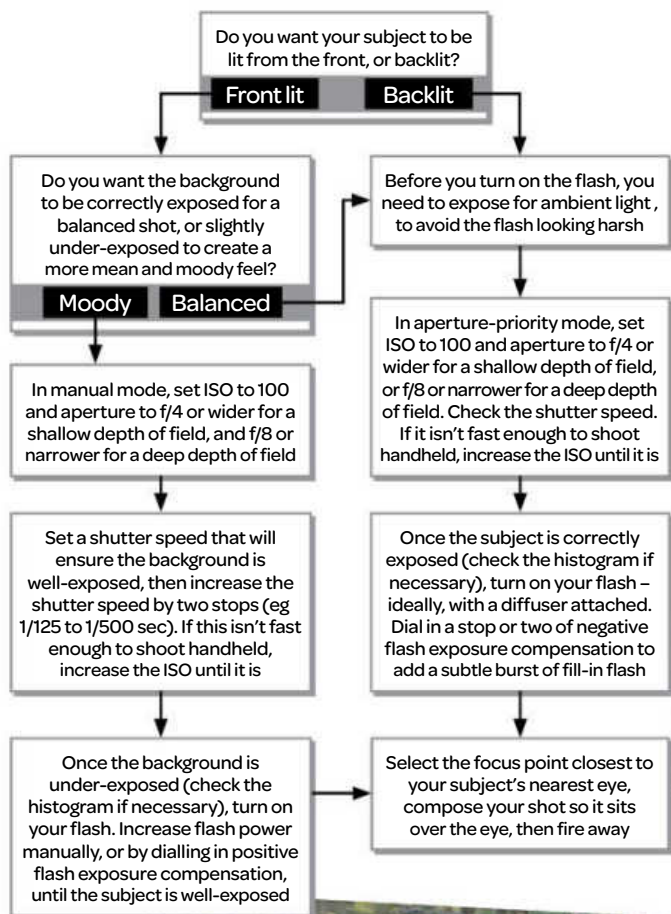
Shoot in the shade or with the sun behind your subject to avoid unflattering shadows

When photographing portraits, the sort of image you take – and the settings you need – will largely be down to lighting conditions, and specifically whether you're shooting indoors or outdoors, and with or without flash. The first thing to bear in mind is that you should always try to focus on the eyes. With this in mind, it's usually a good idea to select the autofocus point nearest to your subject's eye manually, rather than let your camera decide using auto AF point selection (and nearest to the closest eye if you're using a wide aperture and the face is at an angle to the camera).



Outdoors with flash

Don't just use flash for indoor portraits – use it to add impact to outdoor shots too

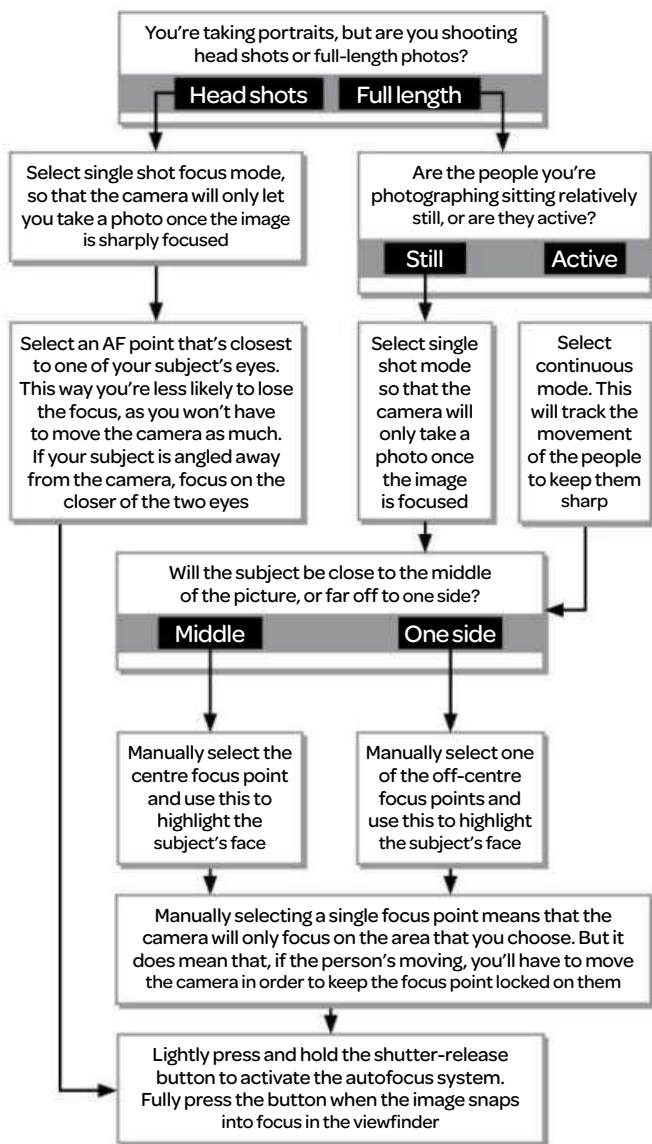


You don't have to go far to take cracking outdoor portraits – your own back garden makes the perfect location for a shoot.

Finding a neutral background or blurring it out with a wide aperture, such as f/4 or wider, is crucial to avoid distractions. Things such as washing lines, hanging baskets or garden tools in the background take the emphasis off the subject, and will make your pictures look messy.

Focusing

Learn how to select the right autofocus mode to ensure pin-sharp eyes in people shots



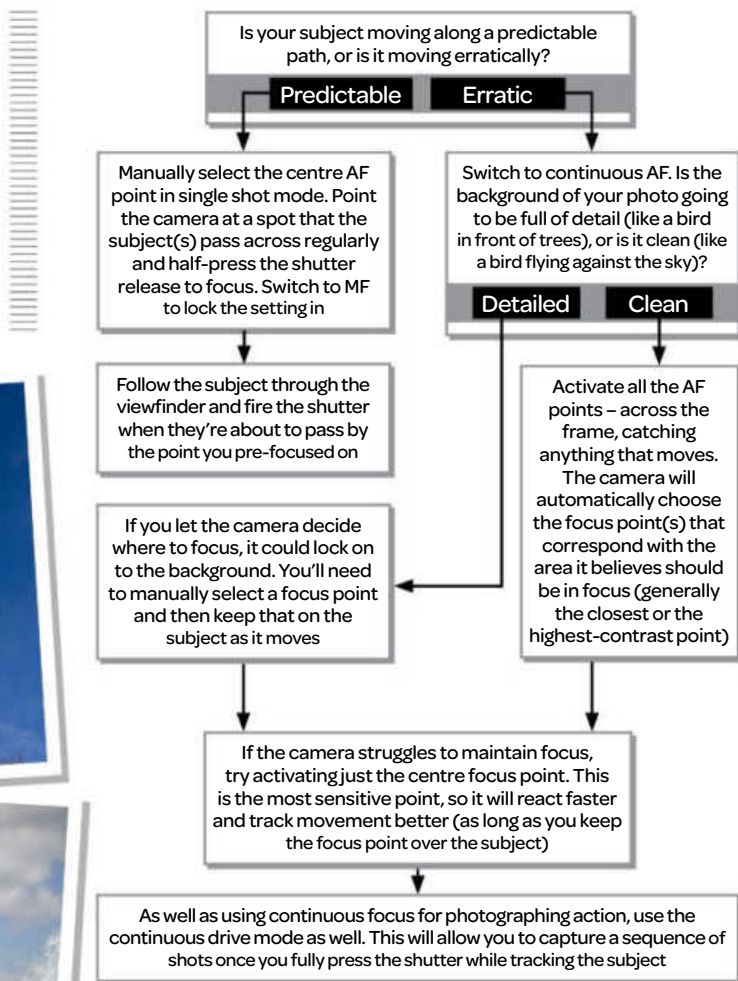
Picking the right focusing mode for your subject is essential if you want sharp results. Most SLRs come with one manual focusing mode and three auto options, including single shot, continuous and an automatic mode that switches between the two.

These auto modes all work the same way (lightly press the shutter release and the lens will focus) but each suits a different type of subject. Single shot AF is perfect for most shooting situations. The picture will be sharply focused, unless you move closer or further away from the subject after locking focus. Use single shot AF when you're shooting static subjects.

Moving subjects

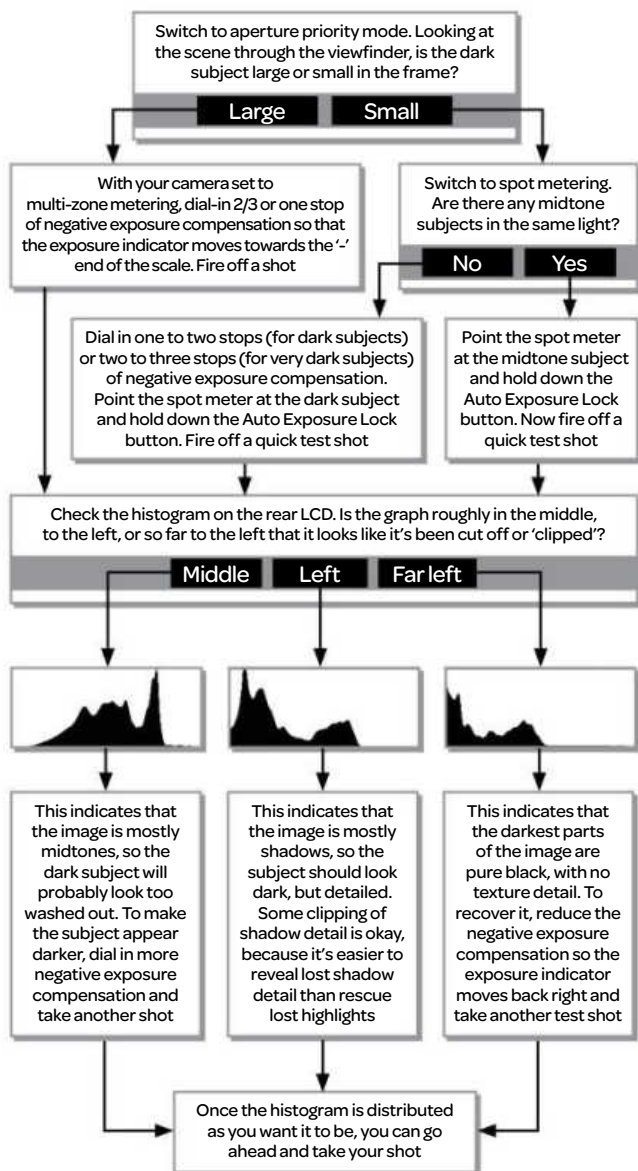
Choose the right AF point set-up so you can stay on target with fast-moving subjects

A I Servo AF (Canon) and Continuous-servo AF (Nikon) adjusts the focus as long as you press the shutter release, so it's the best mode to use when shooting moving subjects. The focus position is never locked, and the camera will let you fully press the shutter to take a picture even if the subject isn't in focus.



Metering: dark subjects

Do your pictures of dark and black subjects look grey? Follow this flowchart to fix the problem



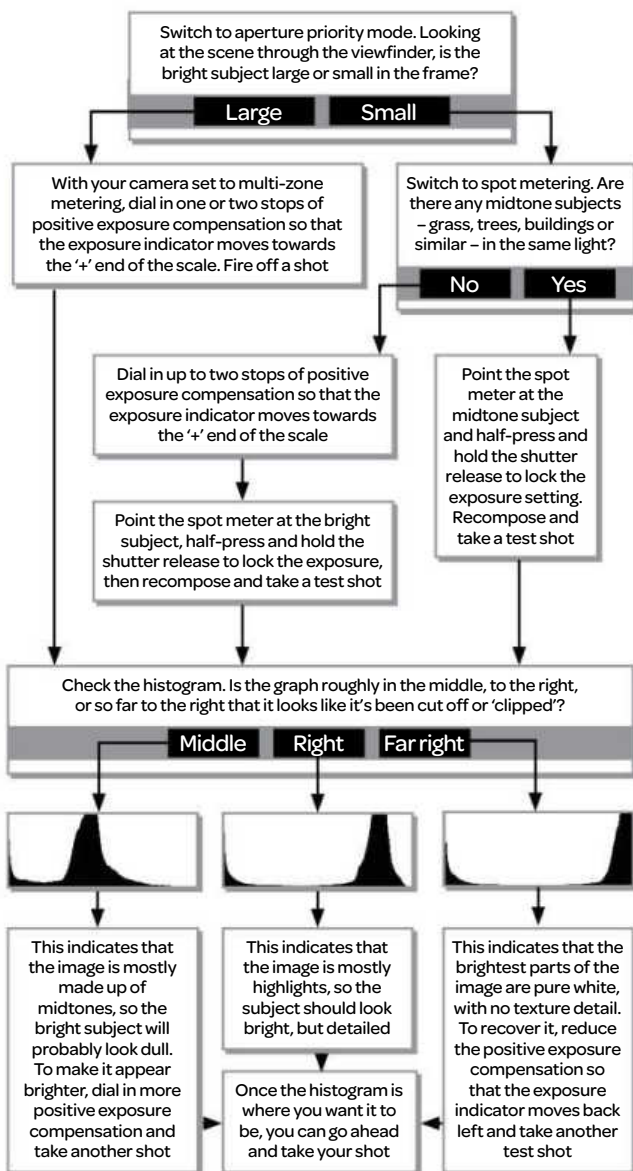
Aperture, shutter speed and ISO are the three building blocks of exposure, and the exposure meter inside your camera essentially brings them all together. The meter measures the amount of light in the scene, and then selects the combination of aperture, shutter speed and ISO to produce a balanced exposure. Most camera meters work on the assumption that a scene should be exposed as if it's 18% midtone grey. This is because it is generally considered that most scenes will reflect 18% of the light that falls on them. But in reality the world is not full of midtones.

Metering: bright subjects

Follow these steps to ensure your shots of bright and white scenes look fresh and clean



Most current SLRs feature systems that can effectively boost dynamic range, such as Canon's Auto Lighting Optimiser and Nikon's Active D-Lighting, but there's no substitute for nailing the correct exposure setting. This is where the histogram comes in. This is a small graph that illustrates the range of tones in the picture, from shadows on the left to highlights on the right.

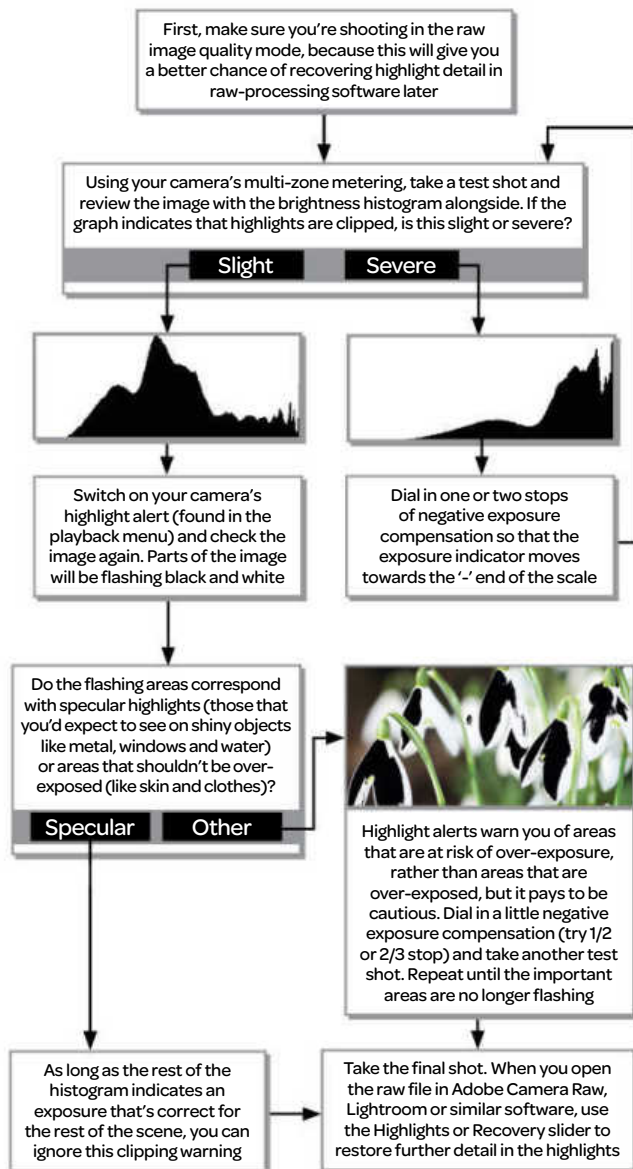


Metering: highlights

Photos can be ruined by over-exposed highlights. Here's how to rescue them



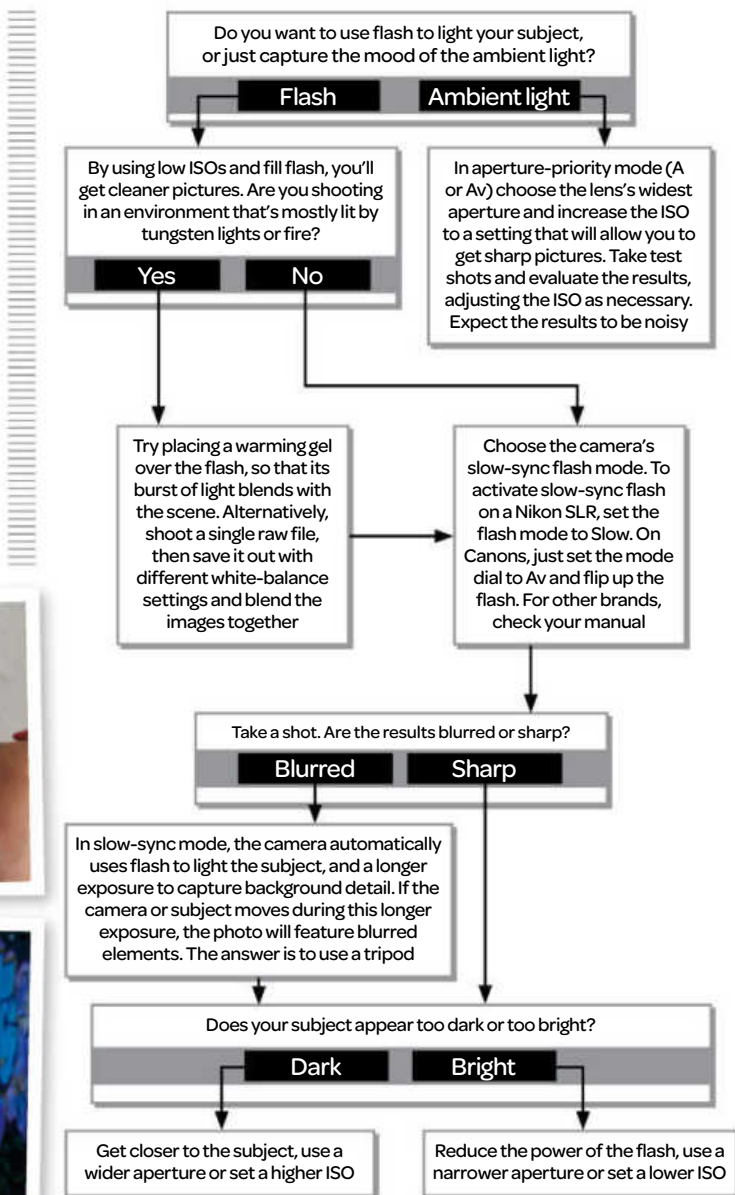
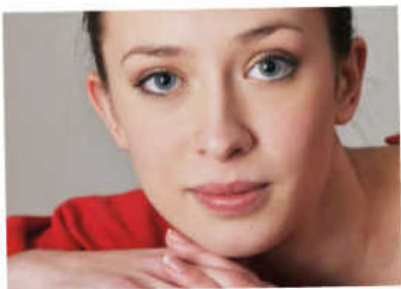
The majority of SLRs offer three metering modes: Multi-zone, Centre-weighted and Spot. The default Multi-zone mode takes individual light readings from multiple segments across the entire frame before the camera sets an exposure. Also taken into account are the active autofocus point, the size and distance of the subject and any backlighting. Centre-weighted takes its reading across the entire frame, assuming the subject will be towards the centre of the picture. For precise measurement, Spot metering is best. It takes its reading from a very small area of the frame.



Portraits after dark

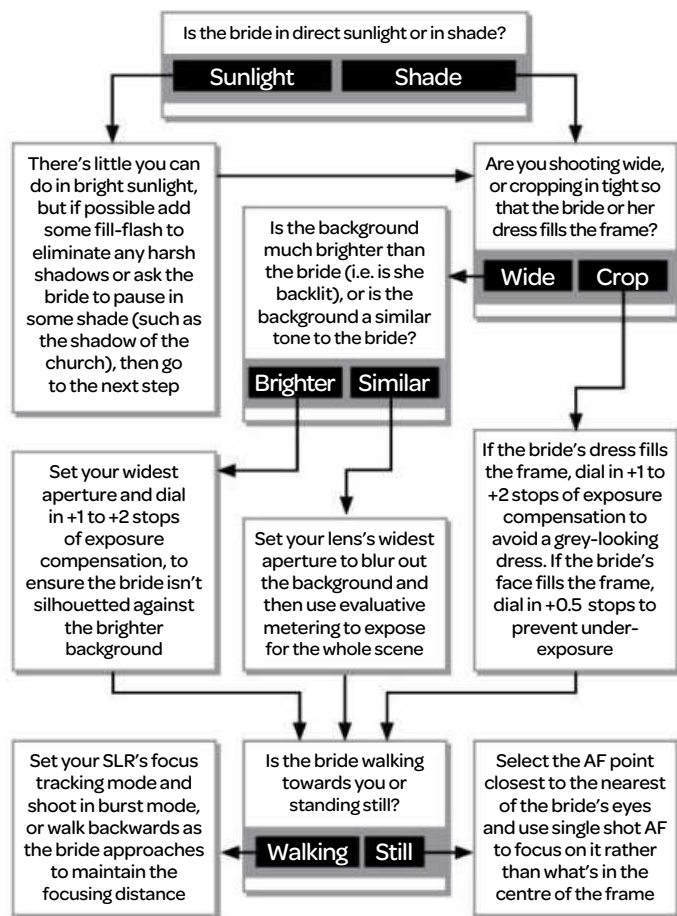
The flash settings and techniques you need to get well-lit pictures of people at night

For the best results, shoot in raw. This way your images will retain the most 'information', which gives you greater scope for enhancing your shots in Adobe Camera Raw and other raw-processing software. Raw is especially beneficial when taking night shots, because it gives more flexibility when you want to change things such as colour temperature, or brighten or darken your exposures. You might be tempted to increase the ISO to access faster shutter speeds, but you'll get the cleanest pictures if you stick to a setting of around ISO100-200. If you move to higher settings, your pictures will suffer.



Weddings: the bride

Exposure compensation is the key to ensuring that the bride and her dress look their very best



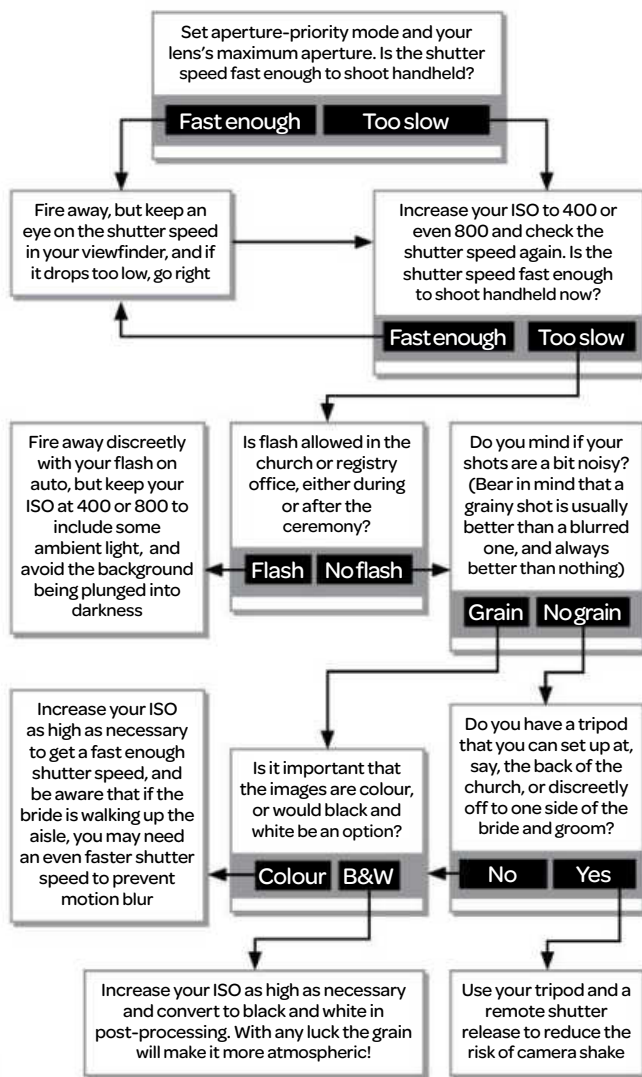
Whether you're just a friend who's been asked to be the 'unofficial' wedding photographer, or an aspiring pro who's been asked to shoot the whole wedding, it's vital to spend some time with the bride and groom well before the big day.

This is important because it enables you to get an idea of what they expect, and to manage those expectations. If you prefer to shoot reportage-style images and they want you to plough through a long list of formal group shots, this is the time to address it. A pro photographer can do both, of course, but even established pros have their own style.

Weddings: in the church

To ensure sharp shots inside a gloomy church you're going to have to bump up your camera's ISO or use a tripod

Arguably just as important as meeting the bride and groom is visiting their chosen venue or venues, preferably at the same time of day as the wedding is due to take place. This will give you a chance to experiment with different settings and to check what will work and what won't. Will the bride be in direct sunlight when she arrives? Will there be enough light in the church to shoot handheld?

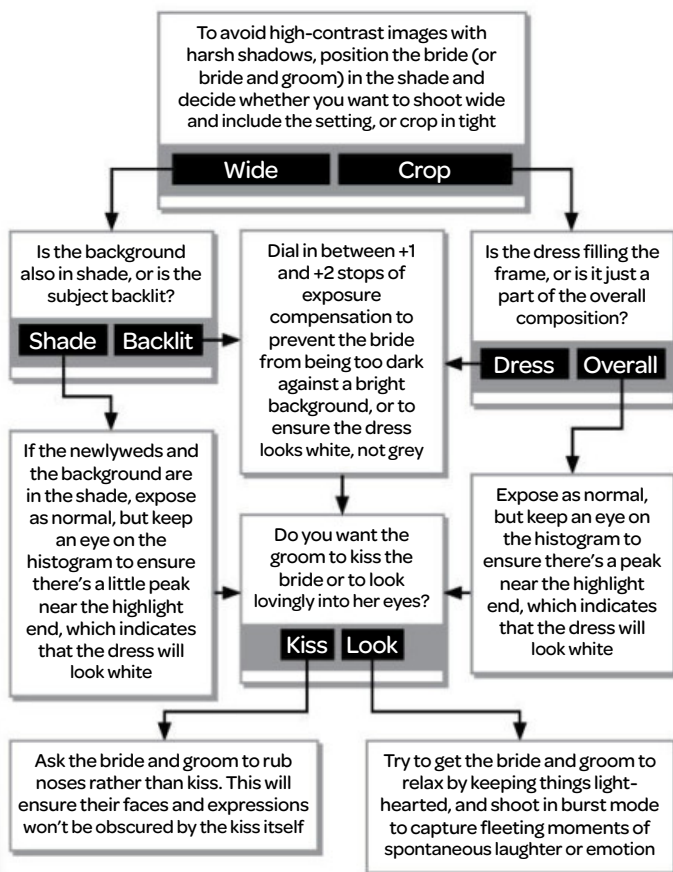


Weddings: the couple

As with the bride arriving, exposure is key, but just as important is capturing a moment between the bride and groom

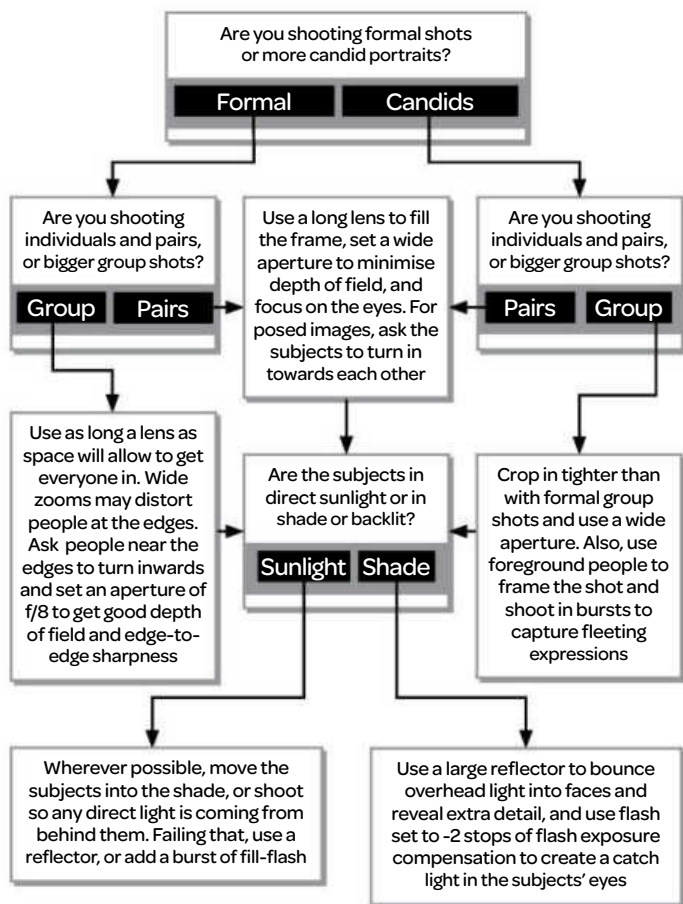
No matter what the bride and groom's expectations are, there are certain key moments throughout the day they're sure to want images of. When you find a set of images you like, try to work out what it is about them that appeals, and print a contact sheet of thumbnails to give you inspiration on the day.

But with the bride and groom, you have more time to be creative. Try to find somewhere shaded and quiet, away from the other guests, where they can stroll, pose and gaze at each other. This can bring on a fit of giggles, which can make for a natural-looking shot.



Weddings: the guests

Formal shots and candids require a different approach, but taking control of depth of field is the key with both



Shooting outdoors is always a challenge. The key is to be discreet (turn off any autofocus beep, for instance), and don't be afraid to bump the ISO right up if you need to; better a grainy shot that an indistinct blur. Ask the best man to take charge of organising the various groups that need to be photographed. Shoot in burst mode to maximise your chances of getting a shot without anyone blinking.

CHAPTER 4



In this section

- 120** — Posing headshots
- 122** — Posing full-length males
- 124** — Posing full-length females
- 126** — Posing a bride and groom
- 128** — Posing toddlers
- 130** — Posing hands and arms

Posing guides

Whether you are shooting
brides, blokes or babies, here
are the ultimate posing tips

Portrait posing guide



LOOK DOWN

TOP TIP: USE EYE MAKE-UP AND SHOOT FROM ABOVE TO GET A BETTER VIEW OF THE EYELASHES

Try asking your model to lower their gaze. This will help to give the shot a thoughtful mood and will also focus attention on the model's hands



WANDERING HANDS

TOP TIP: CAPTURING THE WHITES UNDER EACH IRIS HELPS TO GIVE EYES MORE IMPACT

Ask your model to bring their hands up to their face, with the fingers of one hand resting on the palm of the other, and their chin lowered down



SIT DOWN

TOP TIP: HANDS MAKE A NICER SHAPE IF SIDE-ON RATHER THAN FLAT, WITH CURLED FINGERS

Ask your model to sit side-on (where it is practical), resting their elbows on their knees and with their hands under their chin



ONE-HANDED

TOP TIP: TRY TO CROP THE SHOT CLOSE TO THE HAIRLINE FOR AN ATTRACTIVE VISUAL EFFECT

Ask your model to stand side-on, with her chin angled towards the front shoulder, then bring one hand up to delicately brush her cheek



SIMPLE BUT STRONG

TOP TIP: REDUCE DEPTH OF FIELD. THE EYES SHOULD STAY SHARP AS THEY ARE STRAIGHT ON

A straightforward close-up is classic, and will always have impact. Ask the model to look directly at the camera, with their lips slightly parted



THE WINDSWEPT LOOK

TOP TIP: MOVING HAIR MAKES COMPOSING AND FOCUSING QUITE TRICKY, SO TAKE LOTS OF SHOTS

For an evocative and attractive windswept look, ask the model to stand side-on, then use an electric fan to blow the hair across their face



PERFECT SYMMETRY

TOP TIP: ANGLE FACE TO LIGHT SOURCE FOR CATCHLIGHTS AND OTHER NICE EFFECTS

Bring both of the model's hands together at the wrist with their fingers on each cheek, in order to create a symmetrical frame



YOU'VE BEEN FRAMED

TOP TIP: THINK ABOUT HOW TO POSE THE HAIR TO CREATE A NATURAL FRAME FOR THE FACE

A good way to frame the face is to bring one of the model's hands up to their chin, with the other arm resting on the top of their head

Portrait posing guide



SIDE ON

TOP TIP: BENT ARMS ADD SHAPE, SO TRY MOVING A HAND UP TO BREAK UP THE BODY

Ask your subject to stand side-on. This will give the slimmest view of their body and also give attractive shape to their shoulders



CASUAL DRESS

TOP TIP: FOR A MORE RELAXED FEEL, ASK THE MODEL TO PUT THEIR HANDS IN THEIR POCKETS

Ask your model to stand side-on, with their front foot facing forward and their back foot side-on, resting their weight on the back leg



WALKING TALL

TOP TIP: SHOOT FROM SLIGHTLY LOWER DOWN TO GIVE A TALLER, MORE IMPOSING PORTRAIT

For a tall, cool look, ask your model to walk towards the camera while at the same time exaggerating the drop of their shoulders



COLLARS UP

TOP TIP: SUITS ENABLE A MODEL TO FIX THE CUFF, ADJUST SOME BUTTONS OR HOLD THE LAPEL

Male models often need something to do with their hands while being photographed, so try asking them to adjust their clothes



BACK TO FRONT

TOP TIP: PROPS ARE IDEAL FOR GUYS AS THEY LOOK LESS LIKE THEY ARE FORCING A POSE

Sit your model on a chair, leaning over the back of it. This is a classic portrait technique that helps the model relax while adding a strong structure



TAKE A PEW

TOP TIP: ASK THE MODEL TO RELAX THE ARMS, SO THE HANDS CAN DROP DOWN NATURALLY

While on the chair, ask your model to lean forwards and slightly to the side, with their feet coming together. Again this makes for a more relaxed pose



ON THE MOVE

TOP TIP: BRINGING THE KNEES TOGETHER CREATES A MORE ATTRACTIVE BODY SHAPE

Ask your model to walk side-on to the camera, then turn, keeping the arms loose and slightly bent. Another classic technique that just works



LEAP OF FAITH

TOP TIP: ASK THE MODEL TO FOCUS ON MAKING A GOOD EXPRESSION WHEN JUMPING

Getting your model to jump can add spontaneity to a shoot. Ask your model to bring their legs upwards and allow unfastened clothes to fly free

Portrait posing guide



SIDE ON

TOP TIP: SIDE ON IS THE SLIMMEST VIEW OF THE BODY; USEFUL WITH LARGER PHYSIQUES

Ask your model to stand side on and place her weight on the back foot, so as to slim down their body and emphasise their curves



CROUCHING TIGER

TOP TIP: DO YOUR BEST TO AVOID LOW-CUT TOPS OR DRESSES GETTING ALL SCRUNCHED UP

Ask your model to stand straight on, with one hand on their knee, and one hand in their hair. Then ask them to lean forwards for a striking pose



CROSS THE LEGS

TOP TIP: HOLDING OUT CLOTHING CAN CREATE SOME VERY ATTRACTIVE SHAPES

To slim the body, cross the front leg over so the toes just touch the ground. Dip one shoulder and hold the arms away from the sides



STEPPING OUT

TOP TIP: SLOW-MOTION WALKING WILL MAKE FOCUSING EASIER FOR THE PHOTOGRAPHER

Ask the model to walk from one side to the other while emphasising hip and hair movement, relaxing their arms at the same time



LOOKING DOWN

TOP TIP: YOU DON'T ALWAYS NEED TO GET EYE CONTACT FROM THE MODEL FOR A STRIKING EFFECT

Turn the body side on, place the weight on one side then look down to the opposite side. A half-smile adds to the thoughtful mood



OVER THE SHOULDER

TOP TIP: LONG HAIR HANGING DOWN HELPS TO ADD TO THE INTIMACY OF A COY POSE

Ask the model to stand sideways or face away from you, and then look back across their shoulder for direct eye contact



TRIANGLES

TOP TIP: GETTING THE MODEL TO PART THEIR KNEES CAN OFTEN MAKE A DIFFERENCE

Ask the model to stand on one leg and bring the other foot up the shin. Then bend the arms and use the hair to make triangular shapes in the body



JUMP TO IT!

TOP TIP: WATCH OUT FOR DODGY EXPRESSIONS OR HAIR GETTING IN FRONT OF FACES WHEN JUMPING

Get the model to jump straight up, as high as possible, bending their legs and making some interesting shapes with their arms

Portrait posing guide



CHEST TO CHEST

TOP TIP: MOVE HER FRONT ARM TO HIS CHEST, ARM OR WAIST TO ADD SOME EXTRA VARIETY

Ask the couple to stand facing one another, chest to chest with their weight on their back feet, looking directly at you



EYES ON THE BRIDE

TOP TIP: ASK THE GROOM TO WHISPER IN THE BRIDE'S EAR FOR A ROMANTIC OR FUNNY EFFECT

Get the bride and groom to look at one another, or ask the groom to look at the bride and the bride at the camera – classic posing advice



LEAN WITH ME

TOP TIP: PROFILE SHOTS CAN MAKE SUBJECTS FEEL SHY, SO WATCH OUT FOR DOUBLE-CHINS!

Facing each other, get the groom to hold the bride's waist and back and then lean her gently backwards (but not so it feels or looks unnatural)



TURNED AWAY

TOP TIP: ALWAYS MAKE SURE THE DRESS LOOKS AS TIDY AND SMART AS POSSIBLE. IT'S COST A LOT!

Rotate the 'Chest to Chest' pose above, so that the back of the bride's dress is on view. Get them to hold hands and look towards you



WEDDING DANCE

TOP TIP: MOVEMENT CAN GENERATE NICE BODY SHAPES AND PLEASING EXPRESSIONS

Ask the couple to perform a few slow dance moves. A gentle pirouette creates a nice flowing shape and relaxes the mood for everyone



DOWN THE AISLE

TOP TIP: CHOOSE CONTINUOUS AF (AI SERVO ON CANON) TO TRACK MOVING SUBJECTS

Ask the bride and groom to hold hands and walk slowly towards you while looking at one another, with gently swaying arms



OVER THE THRESHOLD

TOP TIP: ASK THE GROOM TO BOUNCE THE BRIDE FOR A BIT OF FUN. AVOID RED FACES!

Ask the groom to lift the bride side-on. Ensure the bride's dress flows nicely and doesn't get caught up in the groom's hands



FRONT TO BACK

TOP TIP: ASK THE COUPLE TO TOUCH HEADS AND LOOK DOWN TO CREATE AN INTIMATE MOOD

Lean the bride back into groom's chest, with her arms together at her waist. Place her hands on top of his for a lovely, romantic effect

Portrait posing guide



TICKLE TOES

TOP TIP: TRY TO GET DOWN AND LIE ON THE FLOOR TO SHOOT AT THE EYE LEVEL OF THE TODDLER

Posing a toddler is all about making up fun games and then capturing their expressions, so ask them to do something silly like tickle their toes



ON THE FLOOR

TOP TIP: TRY SPINNING OR SLIDING KIDS AROUND FOR FUNNY AND DYNAMIC EFFECT

Lying the child on their back gives you a dynamic angle to shoot from – and will hopefully keep the more fidgety kids still for a while



CLAP HAPPY

TOP TIP: YOUNG KIDS LOVE TO MAKE NOISE, SO GET THEM BANGING AND SHOUTING

Kids love to clap, so encouraging them to do so can lead to happy faces and lively poses – even more so if you clap along with them



ROMPER STOMPER

TOP TIP: GETTING SHY KIDS TO RUN AROUND CAN BE A GREAT WAY TO RAISE A SMILE

If your young subjects can't stay still, harness their energy by getting them to run towards you. Then shoot in bursts before they get tired



UPSIDE DOWN

TOP TIP: GET THE SHOT FAST, BEFORE KIDS GET DIZZY. SO SET UP YOUR CAMERA BEFOREHAND...

Ask someone to hold kids by their waist and turn them upside-down for a great expression (make sure it's safe and maybe not after lunch!)



POCKETS WIZARD

TOP TIP: IF ALL ELSE FAILS, TRY BRIBERY! THE PROMISE OF SWEETS WORKS WONDERS

Kids can look awkward in portraits and wonder what to do with their hands, so get them to put their hands in their pockets for a simple pose



PROPS FORWARD!

TOP TIP: USE PROPS AT THE END AS YOU MIGHT GET TEARS WHEN YOU TAKE THEM AWAY

Props come in very useful with kids. Get them interacting with props for quirky photos with bags of character and engaged expressions

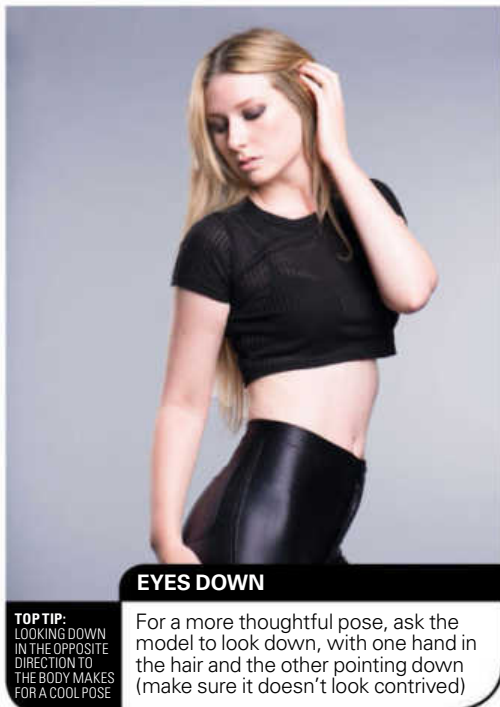
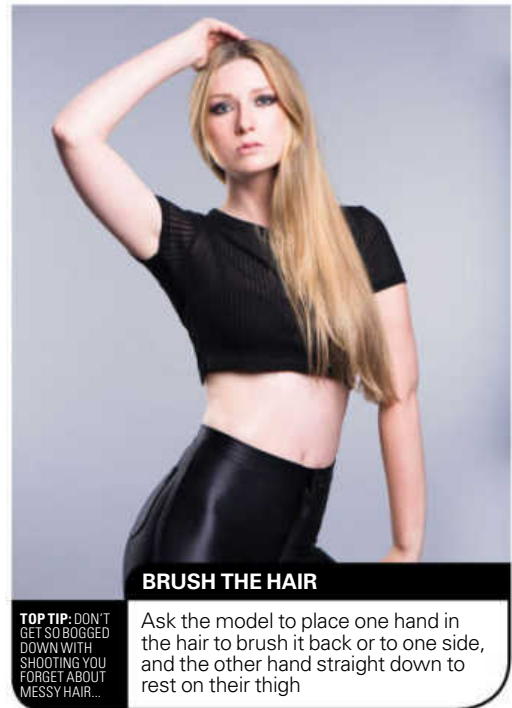
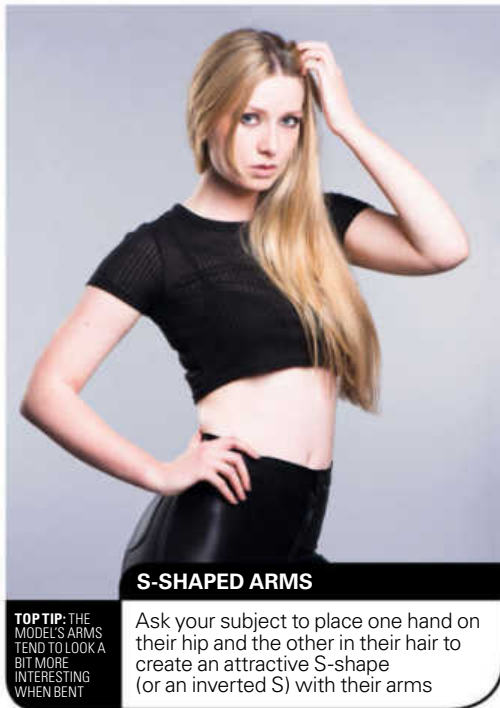


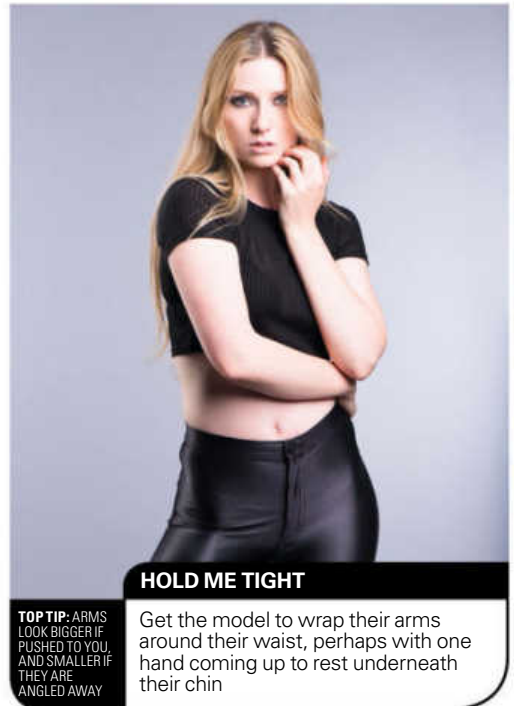
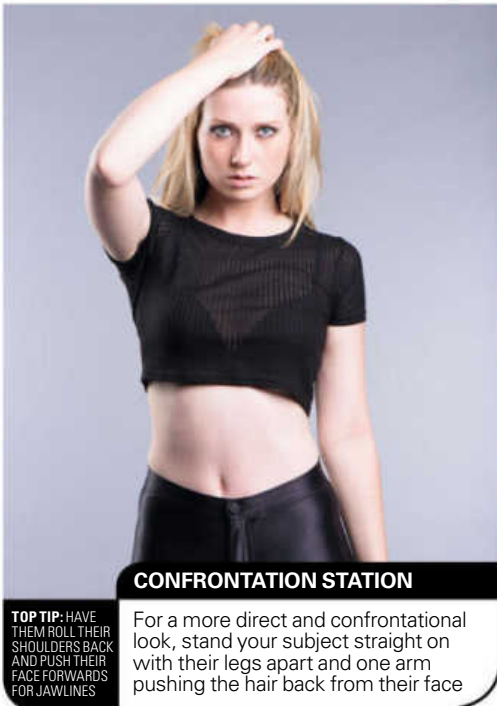
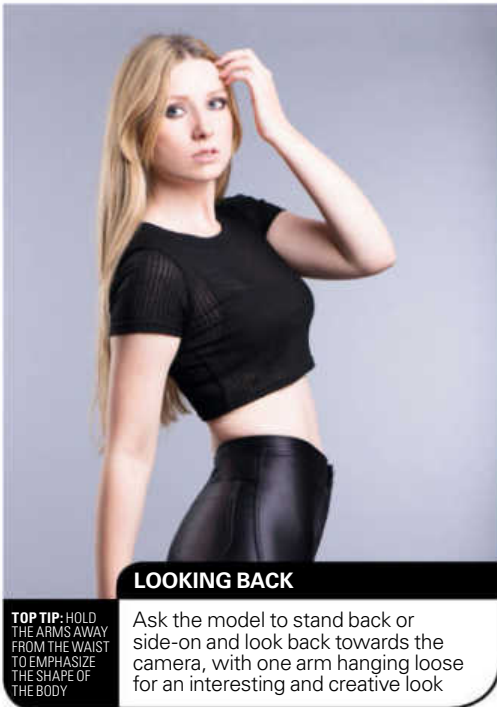
SIT STILL

TOP TIP: ASK KIDS SILLY QUESTIONS, MAKE FUNNY NOISES AND PLAY THE FOOL

Position kids on a chair or stool for a more laid-back pose. A favourite toy will help to keep them occupied for a while as you shoot

Portrait posing guide







CHAPTER 5



In this section

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- 135** — Rembrandt through a brolly
- 136** — Rembrandt with a honeycomb
- 137** — Rembrandt through a silver brolly
- 138** — Rembrandt short
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Lighting guides

Master pro portrait lighting
with these essential studio
set-ups and practical tips

Rembrandt with a softbox

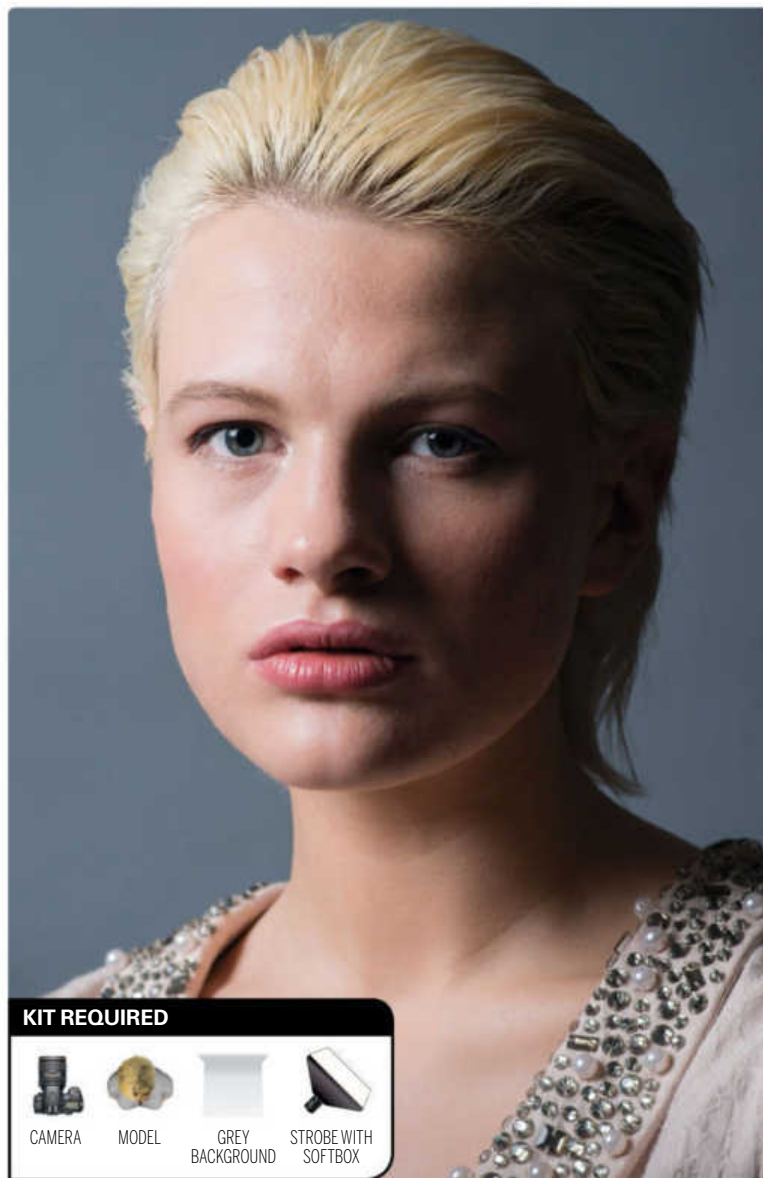
Technique:

Position the light high and to the side to create a triangle on the model's cheek. The shadow of the nose should point towards the edge of the lips. The softbox creates an attractive, soft directional effect.

Set-up:



Lastolite and other makers offer a wide range of portable softboxes but practice folding them up again before your first job



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
SOFTBOX

Rembrandt through a brolly



Technique:

Put the light high and to the side to create a triangle on the model's cheek. The shadow of the nose should point towards the edge of the lips. Shooting through a brolly creates a similar effect to a softbox.

Set-up:

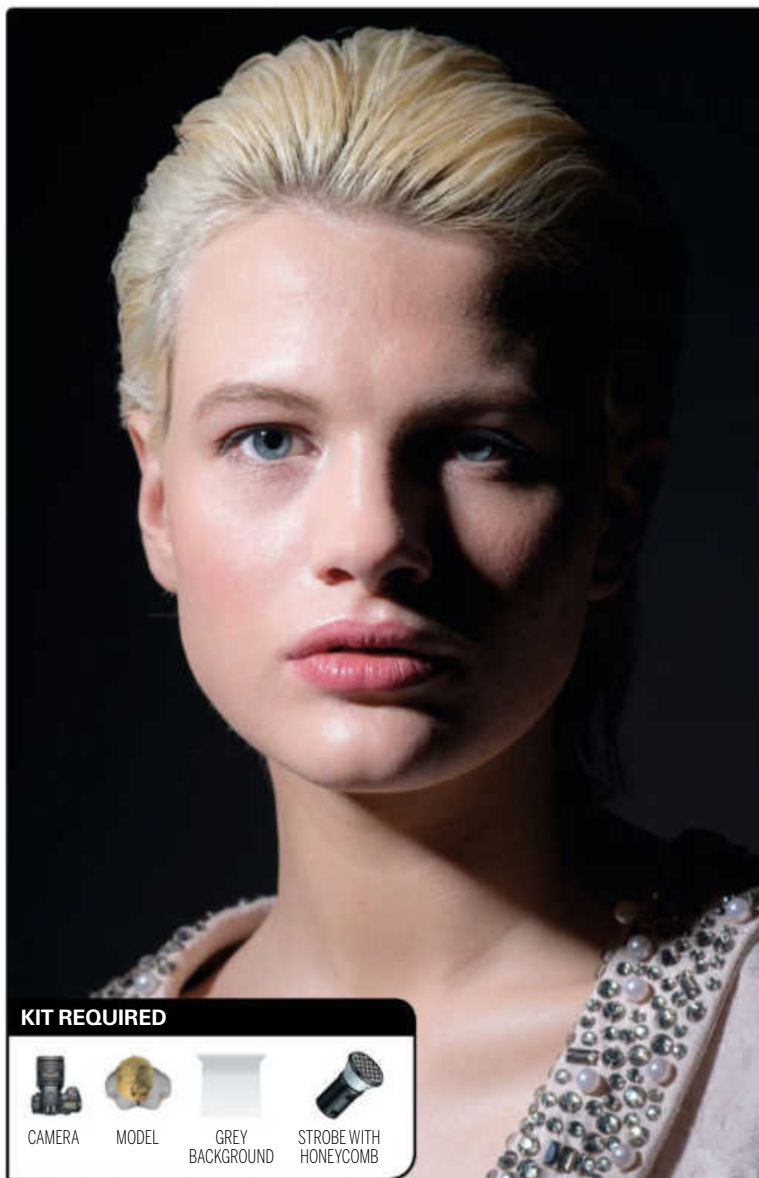


Rembrandt with a honeycomb

Technique:

Position the light high and to the side to create a triangle on the model's cheek. The shadow of the nose should point towards the edge of the lips. The strong directional light is a great way to create drama.

Set-up:



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
HONEYCOMB

Rembrandt through a silver brolly



Technique:

Position the light high and to the side to create a triangle on the model's cheek. The shadow of the nose should point towards the edge of the lips. The reflector causes the light to spread just a little further.

Set-up:



Flash is directed into the brolly so the light is reflected back. Brolly surfaces are usually white, silver or gold

KIT REQUIRED



CAMERA



MODEL

GREY
BACKGROUND

STROBE

SILVER BROLLY USED
AS A REFLECTOR

Rembrandt short

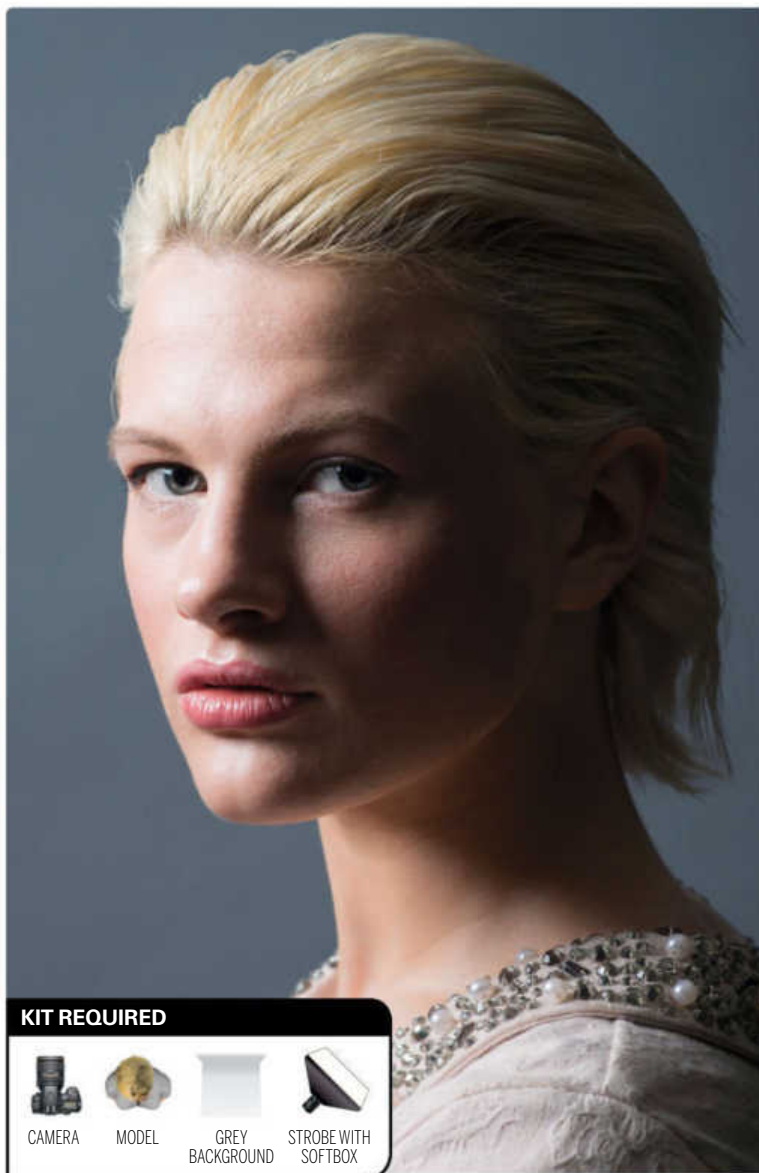
Technique:

Use the principles of Rembrandt lighting to create the triangle of light on the face. Position the model's head at an angle and light it from the opposite side, so the side of the face closer to the camera falls into shade.

Set-up:



Rembrandt lighting often works well with models with full or round faces, because it adds definition and slims the face.



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
SOFTBOX

Rembrandt broad



Technique:

Rembrandt lighting techniques also let you create the triangle of light on the face. Position the model's head at an angle, and light it from the opposite side, so the side of the face closer to the camera is lit.

Set-up:



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



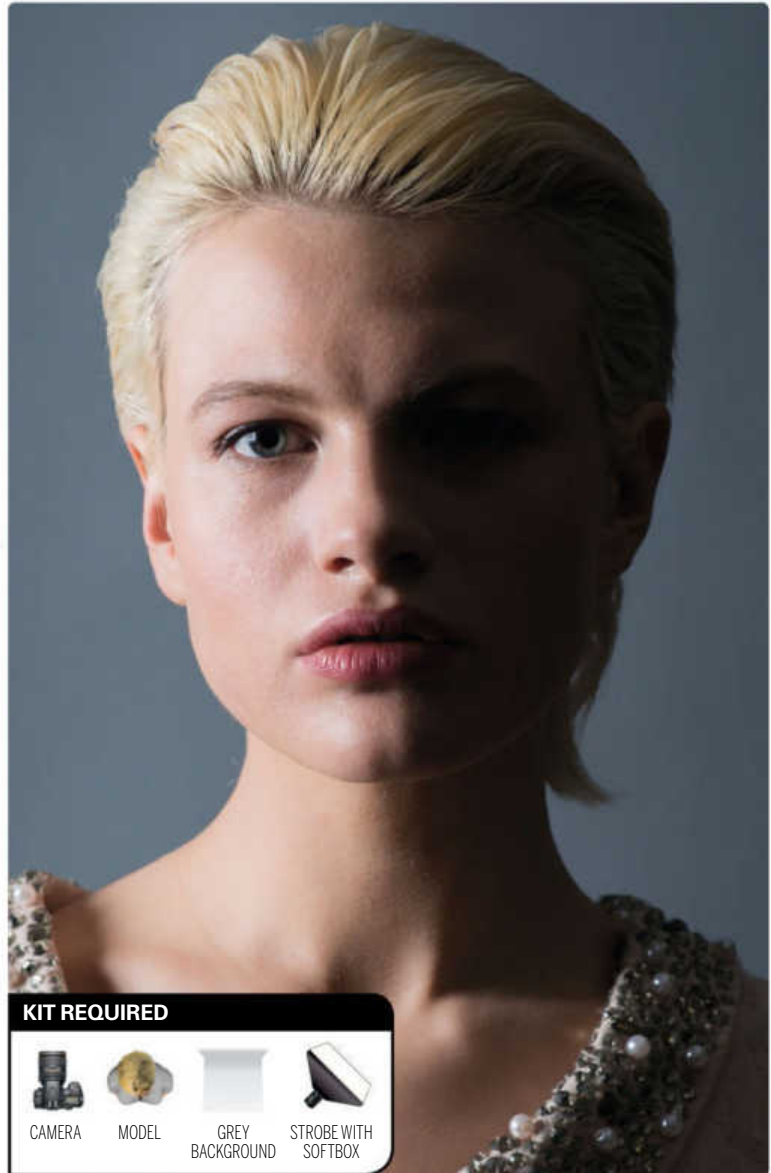
STROBE WITH
SOFTBOX

Split lighting

Technique:

Position a light to one side of the model so that no light spills onto the other side of the face, with a shadow line running down the centre. We've used a softbox here, but any of the light modifiers will work.

Set-up:



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
SOFTBOX

Split with fill



Technique:

Position a light to one side of the model so that no light spills onto the other side of the face, with a shadow line running down the centre. Position a reflector on the opposite side to fill in the shadows.

Set-up:



Split lighting is often used to create quite dramatic portraits. Some feel it's quite 'masculine' so check it suits your model

Split/short

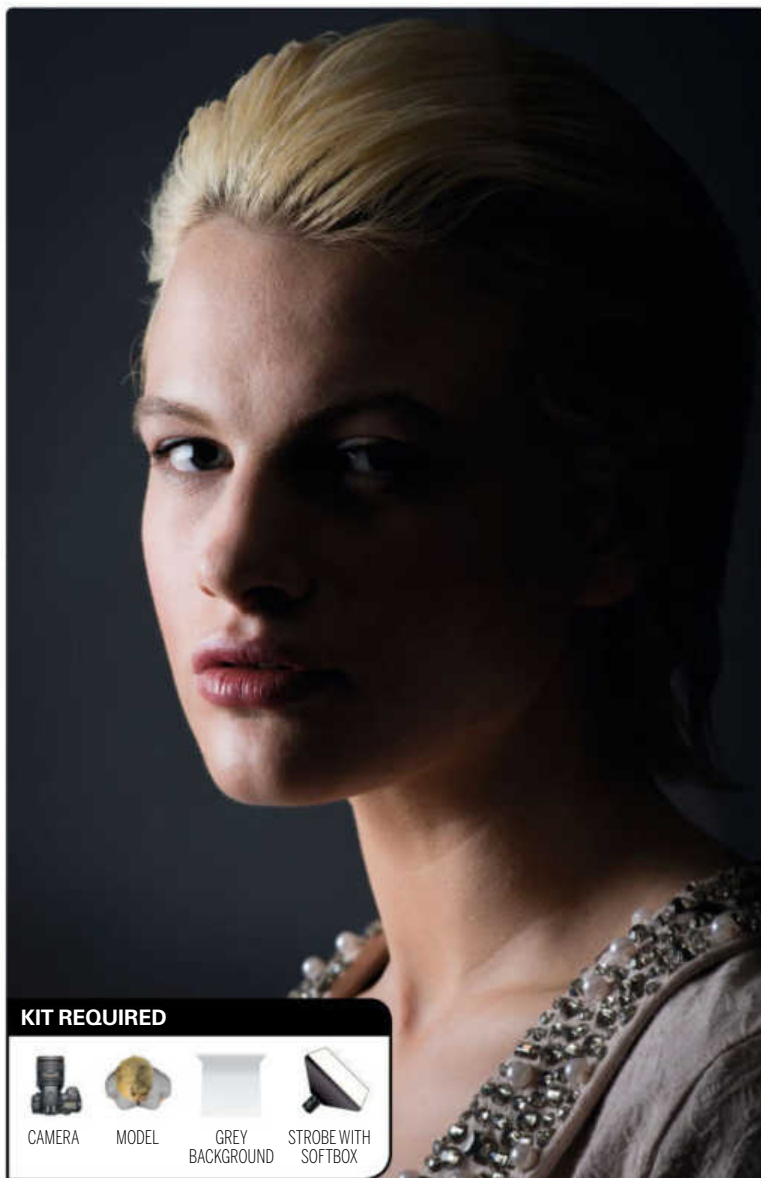
Technique:

Use the split technique with no light spilling onto one side of the face, and pose the model so that her head is at an angle. Position the light so the far (short) side is lit and the rest of the face is in shadow.

Set-up:



Try to ensure that at least one eye has a clearly defined catchlight, in order to give your subject vitality and sparkle



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
SOFTBOX

Split/broad



KIT REQUIRED



CAMERA



MODEL

GREY
BACKGROUNDSTROBE WITH
SOFTBOX

Technique:

Use the split technique with no light spilling onto one side of the face, and pose the model so that her head is at an angle. Position the light so the near (broad) side is lit and the rest of the face is in shadow.

Set-up:



Key with a close softbox

Technique:

Put the softbox above and to one side of the model for a classic Loop or Rembrandt effect. Place the softbox a few feet away. This creates softer shadows. Look at the soft shadow from the nose.

Set-up:



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
SOFTBOX

Key with a far-away softbox



Technique:

Position the softbox above and to one side of the model for a classic Loop or Rembrandt effect. Place the softbox six feet or more away. This will create harder shadows. Look at the shadow of the nose.

Set-up:



Many photographers prefer using softboxes to brollies as it is easier to control light spill, but brollies are more handy...

KIT REQUIRED



CAMERA



MODEL

GREY
BACKGROUNDSTROBE WITH
SOFTBOX

Loop lighting

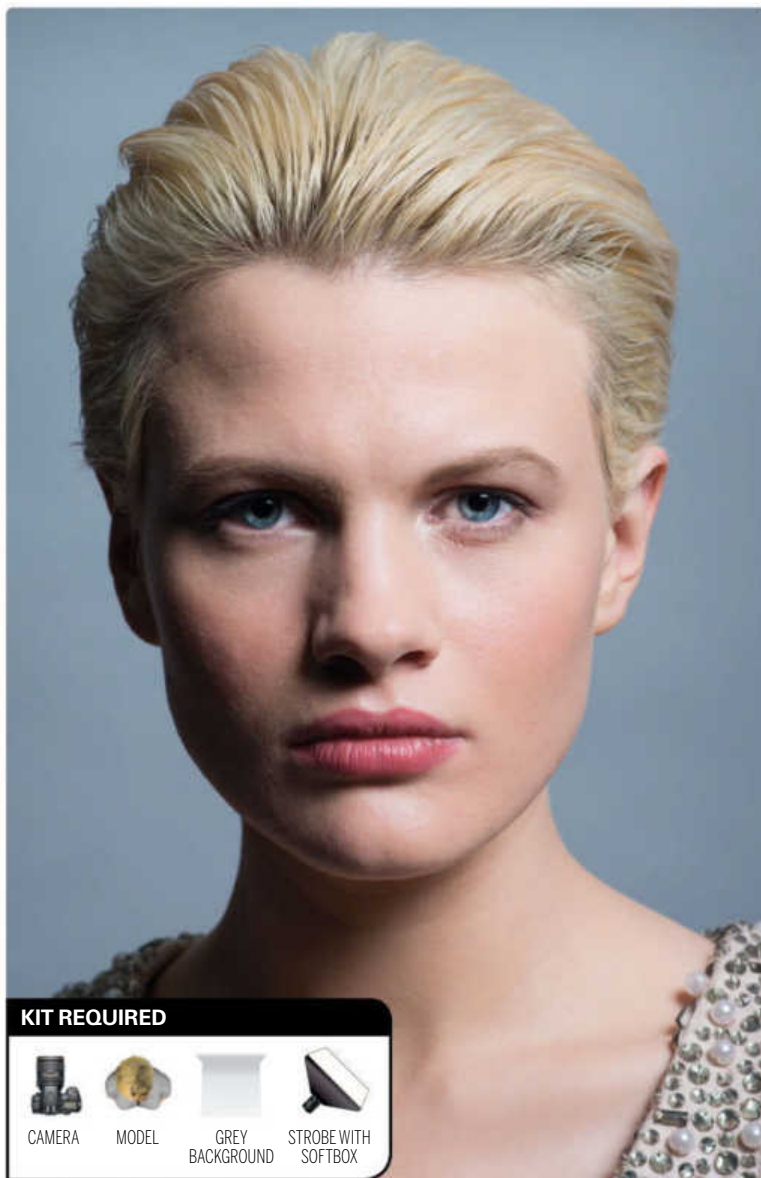
Technique:

This set-up is similar to Rembrandt lighting, but rather than creating a closed triangle of light on the unlit cheek, the shadow from the nose should create a loop pointing towards the corner of the mouth.

Set-up:



As well as being a flattering effect, loop lighting gives depth to the face, so it's great for more 'serious' formal portraits



KIT REQUIRED



CAMERA



MODEL

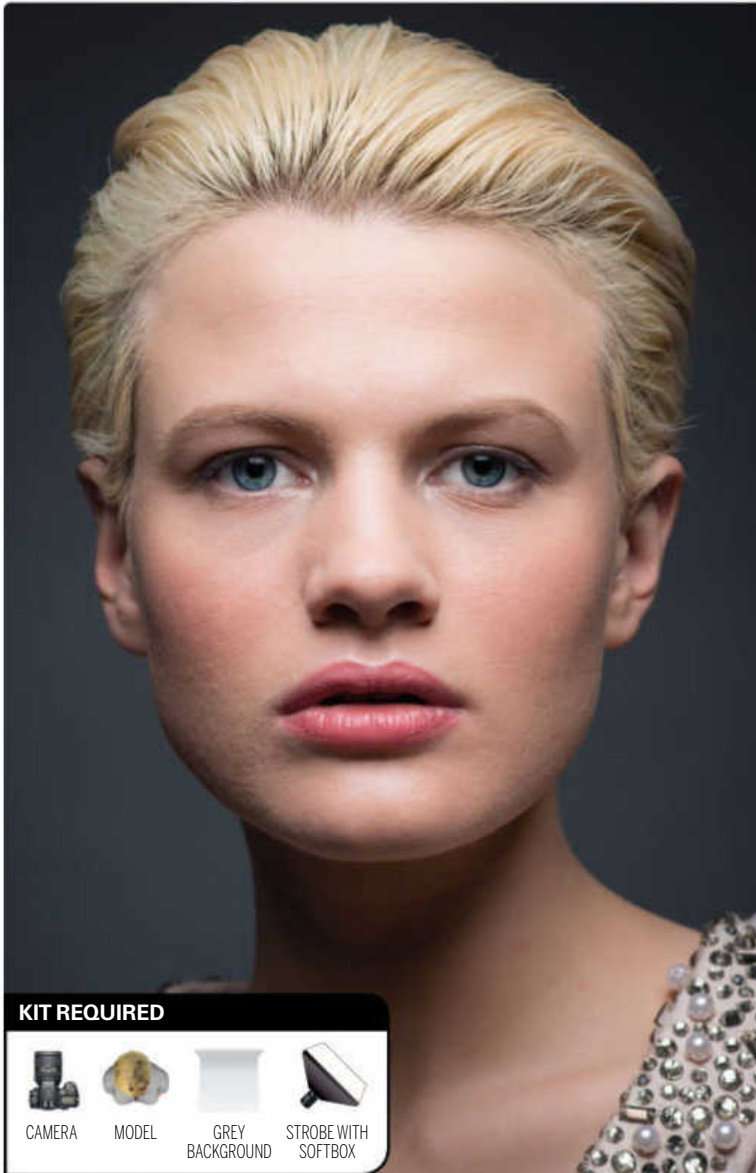


GREY
BACKGROUND



STROBE WITH
SOFTBOX

Butterfly lighting



Technique:

Position one light above and directly in line with the centre of the subject's face. Notice how there's an even shadow under the nose. It's best if this shadow doesn't reach all the way down to the upper lip.

Set-up:



Flat light effects

Technique:

Use a second light and softbox for this set-up, and position both lights set at the same power each side of the subject at the same distance and angle, and at head height. As you can see, there is a lack of shadows.

Set-up:



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
SOFTBOX **x2**

Badger lighting



KIT REQUIRED



CAMERA



MODEL

GREY
BACKGROUNDSTROBE WITH
SOFTBOX **x2**

Technique:

Similar to the Flat Light set-up. To create the striking shadow, move the evenly positioned lights slightly behind the subject. This can generate quite a masculine look, so it works well with male subjects.

Set-up:



Flat light works well when used with a plain white background, as it makes the face really stand out. It's often used in fashion.

Clamshell lighting

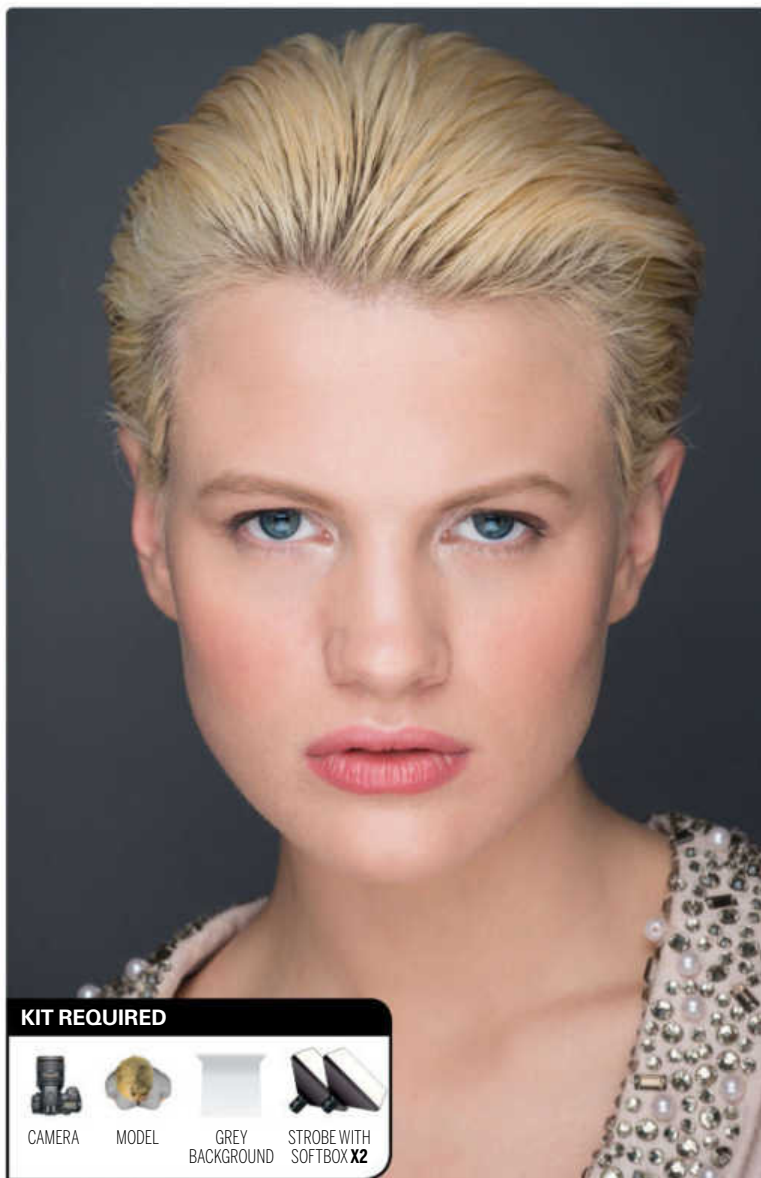
Technique:

This is a really great beauty set-up. Put one softbox above the model in the centre, and one below, also in the centre. A boom arm to support the above light directly above the model is useful, but it isn't vital.

Set-up:



The soft, enveloping quality of clamshell light makes it perfect for female models, especially with strong catchlights



KIT REQUIRED



CAMERA



MODEL

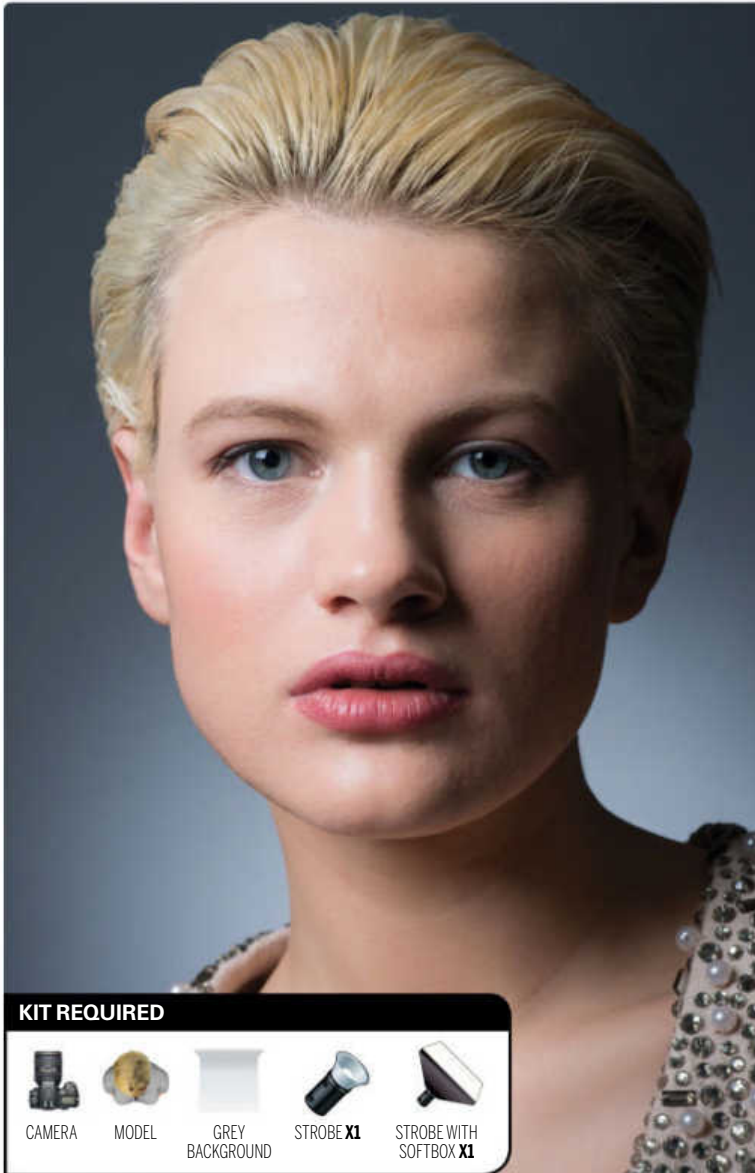


GREY
BACKGROUND



STROBE WITH
SOFTBOX **x2**

Loop with a background light



Technique:

Employ a simple Loop or Rembrandt set-up. Position a second light behind the model, pointing at the background. Adjust the strength and angle to vary the intensity and also the gradient.

Set-up:



KIT REQUIRED



CAMERA



MODEL

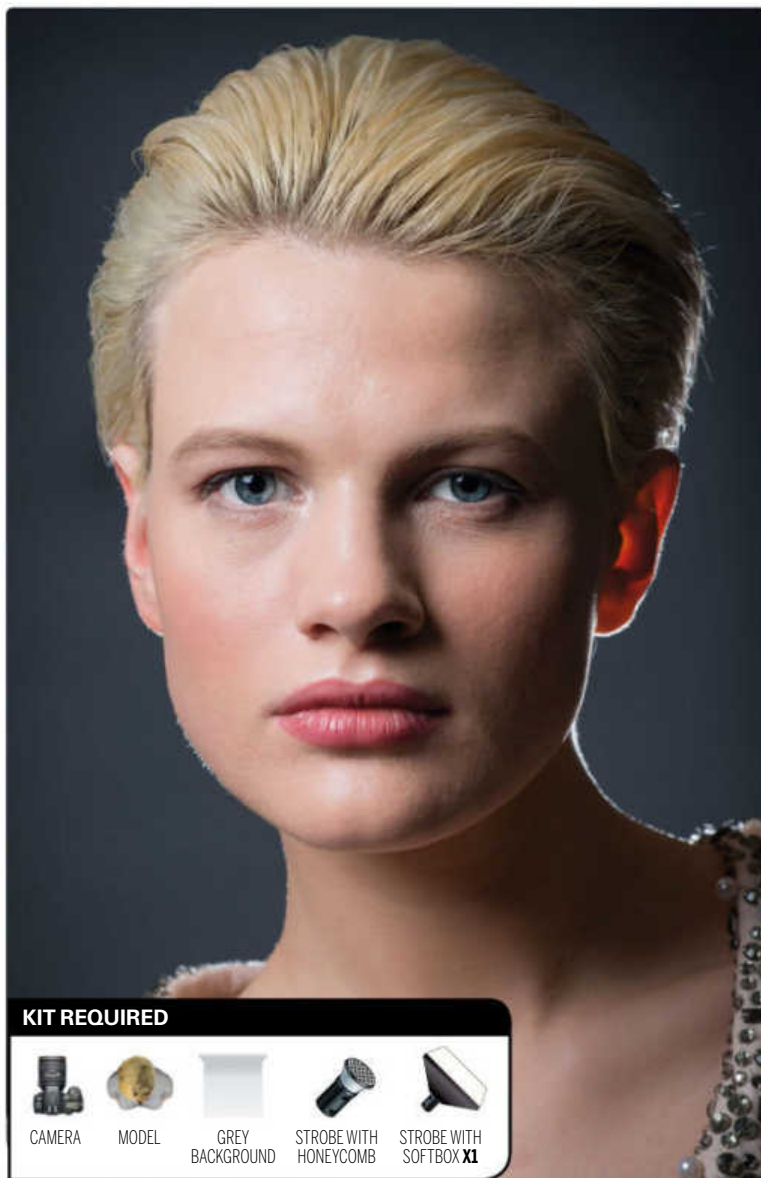
GREY
BACKGROUNDSTROBE **x1**STROBE WITH
SOFTBOX **x1**

Loop with a rim light

Technique:

Employ a simple Loop or Rembrandt set-up. Position a second light with a honeycomb grid or snoot attached, high behind the subject. Angle it so that it catches the edge of the hair.

Set-up:



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
HONEYCOMB



STROBE WITH
SOFTBOX **X1**

High-key effects



Technique:

Use one softbox as a key light and a large silver reflector close to the subject to fill shadows. To ensure that the background is totally white, simply point a strobe towards the background and set it to full power.

Set-up:



The nature of high key portraits makes them ideal for black and white conversion, but ensure the subject doesn't get lost...

KIT REQUIRED



CAMERA



MODEL

GREY
BACKGROUNDSTROBE **x1**STROBE WITH
SOFTBOX **x1**

REFLECTOR

Key and fill

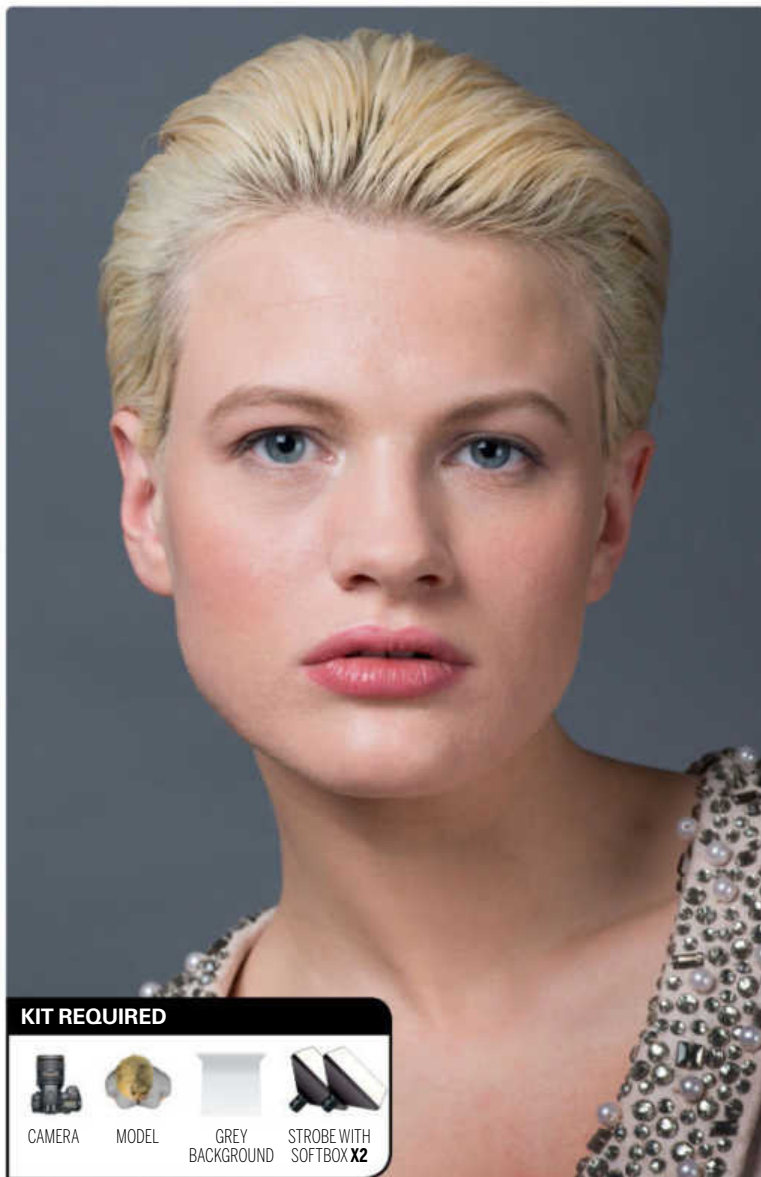
Technique:

Set a key light above the subject at a 45-degree angle to create a basic Loop set-up. Put a second light in a lower position to the other side of the model. Reduce its power to roughly half that of the key light.

Set-up:



Try to shoot tethered if you can, so you see images on your computer, rather than 'chimping' at the camera's rear LCD



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
SOFTBOX **x2**

Key, fill and hairlight



Technique:

Start with a Key and Fill set-up. Add a third hair light above and behind the subject. Attach a honeycomb grid in order to narrow the light beam.

Set-up:



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND



STROBE WITH
HONEYCOMB



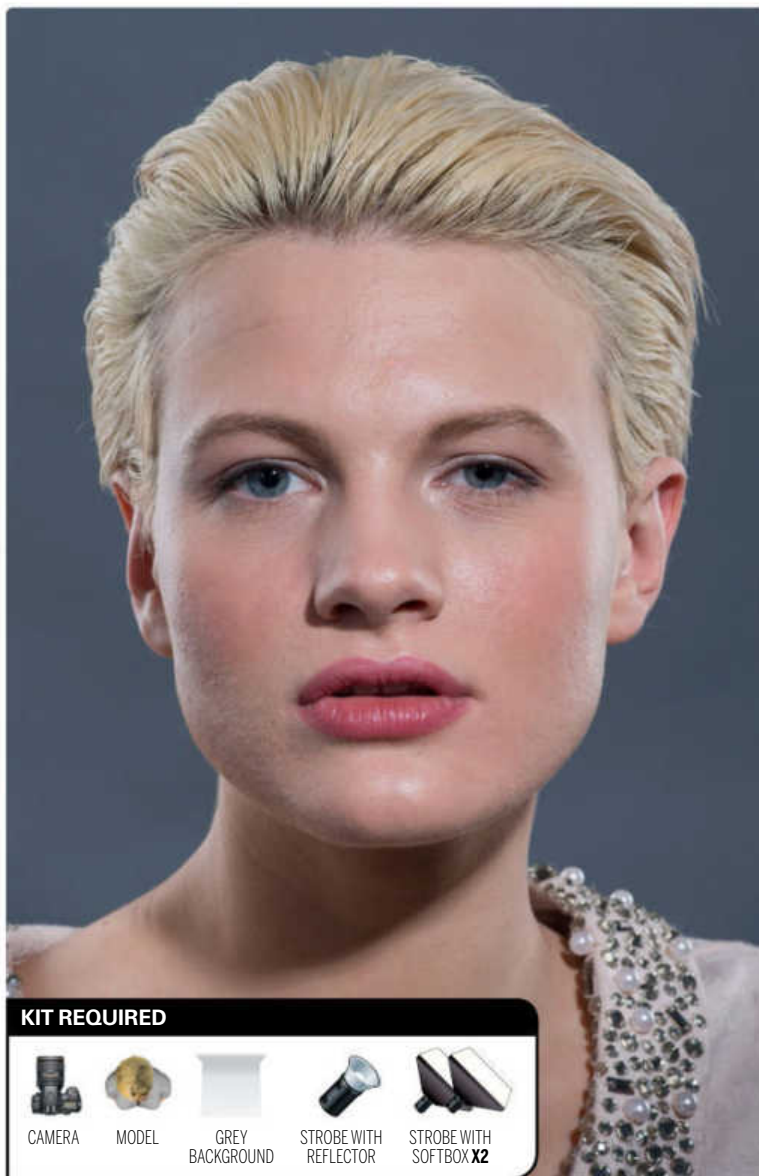
STROBE WITH
SOFTBOX X2

Hard key with kickers

Technique:

Position two softboxes slightly behind the subject. Place a hard light using a reflector or snoot in front of, above and at an angle to the subject.

Set-up:



KIT REQUIRED



CAMERA



MODEL



GREY
BACKGROUND

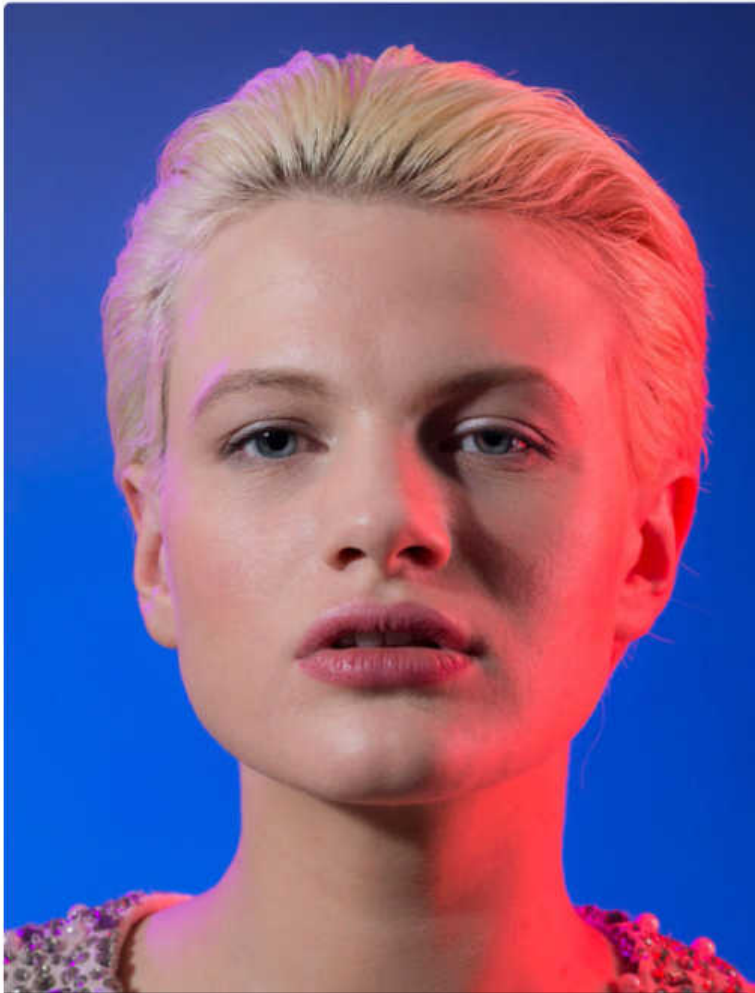


STROBE WITH
REFLECTOR



STROBE WITH
SOFTBOX X2

Coloured gels



KIT REQUIRED



CAMERA



MODEL

GREY
BACKGROUNDSTROBE WITH
REFLECTOR **X4**STROBE WITH
SOFTBOXSILVER
REFLECTORCOLOURED
GELS **X3**

Technique:

A softbox with a red gel creates a glow from the right. A strobe with a blue gel lights the background. A strobe with a purple gel adds an accent.

Set-up:



Coloured gels can evoke a garish portrait style from the 70s or 80s, so use them sparingly, unless you are really are going retro!

CHAPTER 6

The complete dictionary of photography

The ultimate guide to photographic
jargon and acronyms

A

Aberration

An optical fault in a lens that creates a less-than-perfect image.

Abstract

In photography, this term refers to images that concentrate on aspects of a subject such as shape, form, colour and texture, instead of a straightforward representation of a subject.

Adams, Ansel

Adams (1902-1984) was an influential American photographer, acclaimed for his black-and-white landscapes of the American West, and particularly Yosemite National Park. Together with Fred Archer, he formulated the Zone System as a way to determine the optimum exposure for a negative.

Adobe Camera Raw

A plugin included with Photoshop and Photoshop Elements that enables users to process and edit raw files. Adobe Camera Raw is frequently updated to support the newest camera models.

AE

An abbreviation for automatic exposure. This camera feature enables the user to determine the shutter speed and aperture for an image, usually via a TTL (through-the-lens) exposure meter.

AEL

Automatic exposure lock. This is a push-button control that enables you to select the part of the scene from which the camera takes its meter reading, and then lock this setting while the image is re-framed for better composition. The button can also be used for focusing.

AF

Stands for autofocus, a function first introduced on cameras in the late 1970s, in which the lens is adjusted automatically to bring the designated part of the image into sharp focus. Almost all modern lenses for digital SLRs have AF, which is achieved via one or more sensors and a motor either integrated in the lens itself or the camera body.

AF illuminator

This is a system used by some cameras and flashguns to assist autofocus operation in poor light. A pattern of red light is projected on to the subject, which aids the contrast-detection autofocus to adjust the lens correctly.

AF-S

This stands for 'autofocus-silent', and refers to Nikon lenses that use a silent motor to control the autofocus system.

AL

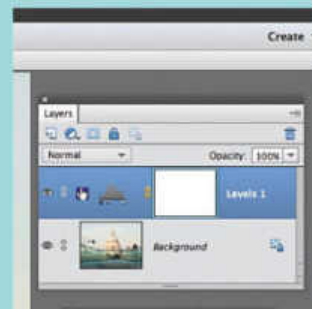
See aspherical lens.

Albumen print

A type of photographic print, invented in 1850 by Frenchman Louis Désiré Blanquart-Evrard (1802-1872). It consists of a sheet of paper coated in egg white (albumen) and salt, then dipped in a light-sensitive silver nitrate solution. The paper, when dried, is overlaid with a glass negative and exposed to the sun. The albumen print was widely used until the late 19th century.

Alternative processes

This term refers to a range of photographic processes, mostly dating from the late 19th and early 20th century, which devotees continue to use for their unique qualities. They include the daguerreotype, gum



Adjustment layer

This is a layer containing an image adjustment or effect instead of image content. Like a red Cellophane overlay on a print, an adjustment layer will alter the appearance of layers below it, but not actually alter their content, making adjustment layers a cornerstone of reversible, 'non-destructive' editing. The adjustment can be altered, hidden or removed at any point. When you add an adjustment layer, a mask is also automatically created, so that the effect can be applied to a lesser extent (or not at all) in particular areas of the image.

bichromate, cyanotype, salt print, bromoil, platinum and palladian processes.

Ambient light

The existing light in a particular scene, which may be sunlight, moonlight or an artificial light already providing illumination. It excludes any light source added by the photographer, such as flash or studio lighting.

Angle of view

A measurement of how much a lens can see of a scene from a particular position, usually measured in degrees. The longer the focal length of the lens, the narrower the angle of view. Zoom lenses have adjustable angles of view.

Antialiasing

A method of smoothing diagonal or curved lines in digital images to avoid a 'staircase' or 'stepped' appearance (also called 'jaggies'), caused by the fact that the pixels making up an image are discrete blocks of colour.

Aperture priority

Semi-automatic exposure system, where the aperture is set by the photographer. The shutter speed is then set by the camera to suit the light level reading taken by the camera's own meter.

APO

Abbreviation of apochromatic. This is used to describe Sigma lenses that use super-low dispersion (SLD) lens elements to reduce chromatic aberration.

APS

The initials of the Advanced Photo System, a short-lived film photography format introduced by Kodak and other manufacturers in 1996. The 24mm film

was housed in a drop-in cartridge, and could be shot in three different formats. It was mainly used in compact cameras, but also a small number of SLRs.

APS-C

This refers to the size of sensor used in some digital cameras, measuring around 22.5x15mm, and with a 3:2 aspect ratio. It gets its name and dimensions from the APS (Advanced Photo System) film format, used in its Classic (C) aspect ratio.

Artefacts

Flaws in an image caused by limitations in the recording or manipulation process. Examples include colour and tonal banding, random blotches or a mottled, grainy appearance.

ASA

A method of measuring and specifying film speed, or a film's sensitivity to light, as devised by the American Standards Association in 1943. It was replaced by the ISO (International Organisation for Standardisation) film speed system in the 1980s. Also, see ISO.

AS and Asp

Abbreviations for aspherical. See aspherical lens.

Aspect ratio

The relationship between the width and height of a picture, which describe the proportions of an image format or a photograph. The aspect ratio of most D-SLRs is 3:2, while on most other digital cameras, it's 4:3.

Aspherical lens

A lens element that has a surface that isn't perfectly spherical. All camera lenses are made up of a number of individual

lenses or elements. Many of these elements are spherical, as if cut from a sphere. Aspherical elements are less rounded and are used in wide-angle and wide-apertured lenses to help provide distortion-free images.

Astrophotography

Photography achieved by attaching a camera to a telescope, and concerned with recording images of astronomical objects in the night sky such as stars, planets, comets, and the moon. Astrophotography can also be used to record astronomical objects invisible to the human eye by using long exposures.

AT-X

Stands for Advanced Technology Extra – the branding used on all current Tokina lenses.

Autobracketing

A feature on some cameras that enables you to automatically shoot a sequence of shots of the same scene at slightly different shutter speeds (or aperture settings) from the 'correct exposure'. This feature can be used if there's some doubt that the meter reading is accurate for a particular subject. It can also be used to shoot a sequence that's combined into one high dynamic range image. See HDR. Other autobracketing features available on some cameras include automatic flash, ISO or white balance bracketing.

Autochrome

The name of the first colour photography process, invented by French brothers Auguste and Louis Lumière, and patented in 1903. A glass plate was coated in microscopic grains of potato starch, coloured red, green and blue, overlaid with a black-and-white silver halide emulsion.

The process was widely used until Kodachrome and Agfacolor films were introduced in the 1930s.

Autofocus

See AF.

Available light

See ambient light.

Avedon, Richard

Avedon (1923-2004) was one of America's most famous fashion and portrait photographers. He was the chief photographer for Harper's Bazaar magazine in the 1940s and Vogue from the 1960s. His portraits are famous for their intimacy as well as their stark and minimalist quality.

AWB

Automatic white balance. This is a system that automatically adjusts the colour balance of an image, according to the colour temperature of the light source, to make it look as natural as possible to the human eye.

B

B (Bulb)

A shutter speed setting that enables you to keep the shutter open for as long as the shutter release is held down, usually with a remote release. It's used for long exposures of up to several minutes.

Backlighting

An image is backlit when the light source is on the far side of the subject in relation to the camera. It means that there's more light coming from behind the subject than is directly on the subject itself. It's often used to separate the subject from the background to make a subject more

dramatic, or to make a silhouette or rim-lighting effect.

Backup

A copy of a digital file that's kept in case of damage to, or loss of, the original digital image.

Ballhead A type of tripod head in which the head mount, which holds the camera, is attached to a ball-and-socket joint. When the socket is tightened using the ball lock knob, it locks the head in place.

Barn doors

Four hinged doors fixed on the front of studio lights. The doors are used to modify the shape and direction of the light.

Barnack, Oskar

Barnack (1879-1936), an optical engineer and industrial designer, is known as 'the father of 35mm photography' for his work as the head of development at the Leitz camera company. He designed the first Leica camera, which went on sale in 1925, and introduced the 24 x 36mm format (now known as 35mm) for still photography.

Barrel distortion

Barrel distortion is a lens fault or aberration that causes straight, parallel lines in an image to bow outward, and is seen when shooting with wide-angle lenses. The wider the lens, the greater the distortion. The appearance is similar to the effect you'd see if an image was wrapped around a barrel. It can be corrected using post-capture software.

Beauty dish

A studio lighting device used to give a flattering effect in portrait and fashion photography. It consists of a large circular dish-shaped reflector, usually around



Aperture

The opening in the lens that restricts how much light reaches the image sensor. In all but the most basic cameras, the size of the aperture is adjustable. The aperture setting used has an important role to play in both exposure and depth of field.

40-50cm in diameter, with a light source in the centre. The light usually has an opaque cover so that only the diffused light reflected from the dish reaches the subject.

Bellows

A concertinaed tube made of flexible, light-proof material that separates a lens from the camera body. Bellows were first used on very early cameras in the mid-19th century, and are still used on large-format equipment (such as the Ebony view cameras) today. They allow the plane of focus to be adjusted via a swing and tilt mechanism. Bellows are also used instead of extension rings on SLR cameras for making more finely adjustable macro images.

Bit

The basic unit from which any digital piece of data is made. Each bit has a value of either 0 or 1. The sizes of digital files are usually counted in bytes, which are each made up of eight bits.

Bit depth

The number of bits used to record the colour of a single pixel. Digital cameras usually use at least eight bits for each of the red, green, and blue channels, providing a 24-bit depth, and a possible 16,700,000 colours. Many digital SLRs offer higher bit depths when set to record in the raw shooting mode.

Black trinity

A derogatory name given by fashion and portrait photographer Norman Parkinson (1913-1990) to three photographers who emerged in the late 1950s and early 1960s: David Bailey (born 1938), Brian Duffy (1933-2010), and Terence Donovan (1936-1996). This trio worked in a more relaxed and spontaneous style, and

became the leading fashion and portrait photographers of the period.

Blending mode

Blending modes determine how the pixels in a layer interact with the underlying pixels on other layers instead of simply covering them. Some blending modes are much more useful for photo editing than others. Multiply is used to darken an image, and Screen to lighten it; Overlay and Soft Light boost contrast.

Blown out

Bright areas in a photo that are over-exposed are said to be blown out. They don't hold any detail and will be bleached white.

Bokeh

Derived from the Japanese word for 'blur', this term is used to describe the aesthetic quality of the blur in out-of-focus areas of a picture, or the lens creating them. Smooth, circular out-of-focus highlights are a feature of 'good bokeh'.

Bounding box

In Photoshop, a rectangular border around a selected part of an image that can be dragged to transform, rotate, scale or move a picture element.

Bracketing

A system for increasing the chances of getting the correct exposure by taking a sequence of pictures with a slightly different exposure setting for each. See autobracketing.

Brady, Mathew

Mathew Brady (1822-1896) was a pioneering American photographer, famous for his photographs of the American Civil War and his portraits of

prominent Americans, including Abraham Lincoln.

Brandt, Bill

Bill Brandt (1904-1983) was an important British photographer who began his career documenting the British class system in the 1930s. He went on to photograph London in the war years before bringing his unique style to landscapes, portraiture and finally abstract nudes.

Bridge camera

A camera that is claimed to bridge the gap between compacts and D-SLRs. They are similar in appearance and handling to small D-SLRs, but they have a fixed, usually 'superzoom' lens, with some models offering up to a 50x optical zoom. They are also usually a little smaller. Instead of a D-SLR's optical viewfinder, they have an electronic viewfinder.

Brightness range

This is the difference between the brightness of the brightest part of the subject and the brightness of the darkest part of the subject. Also known as Subject Brightness Range (SBR).

Bromoil

A photographic process in which prints made on silver bromide paper are chemically bleached and hardened before an oil pigment is applied. It was popular among Pictorialist photographers from its invention in 1907 until the 1930s.

Brownie

The name of a series of simple box cameras made by the Eastman Kodak company. The first Brownie went on sale in 1900, and was intended to make photography simpler and more affordable for everyone. The cameras were named

after the cartoon characters created by illustrator Palmer Cox.

Buffer

Temporary memory used by a digital SLR. The size of the buffer in a camera helps dictate the maximum burst rate, and the number of shots per burst. In general, the bigger the buffer, the longer the burst.

Burn tool

A tool that can be used to darken parts of an image selectively during digital image manipulation. The tool gets its name (and its hand-shaped icon) from 'burning-in', a traditional darkroom process in which parts of a print could be made darker by giving some areas of a print more exposure than others. Also, see Dodge tool.

Burst rate

The continuous shooting speed of a digital camera, which enables a sequence of images to be taken in rapid succession, measured in frames per second (fps). The rate can only be sustained for a certain number of shots.

Butterfly lighting

A technique for lighting portraits achieved by pointing the flash down towards the front of the face and creating a distinctive butterfly-shaped shadow under the nose. A reflector is used to soften the shadow. This technique is also known as 'Paramount lighting' after the movie studio's glamorous portraits from the 1930s.

Byte

The standard unit for measuring the memory capacity of digital storage devices. Each byte can have one of 256 different values, and is equal to eight bits. Also, see bit and bit depth.

C

Cable release

A mechanical or electronic device for firing a camera from a short distance away, without physically pressing the shutter release. It's often used as a way to minimise vibration when using a slow shutter speed and a camera support, such as a tripod.

Calibrator

A device used to standardise the colour and brightness of a computer monitor so that images can be accurately adjusted.

Calotype

One of the earliest photographic processes, announced by William Henry Fox Talbot (1800-1877) in 1841, in which a negative image was recorded on a sheet of translucent paper coated with light-sensitive chemicals. The earliest surviving example is an image of a window at Lacock Abbey, made in 1835. Using the process, multiple positive images could subsequently be produced by contact-printing the negative.

Camera shake

Blurring of the image caused by movement of the camera during the exposure. Handheld cameras are prone to camera shake, and the fastest available shutter speed needs to be used to reduce or eliminate the problem.

Camera trap

A remotely activated camera used for documenting the behaviour of wild animals in a natural environment without the photographer being present. The camera's shutter is usually triggered when an animal's movement is detected by an infrared or motion sensor.



Bounce flash

Indirect flash-lighting technique, where the flashgun is angled to bounce off a wall, ceiling, or other reflector. This scatters the illumination, creating a softer lighting effect.



Cameron, Julia Margaret

Julia Margaret Cameron (1815-1879) was a British photographer who made portraits of some of the major figures of the Victorian period as well as her relatives and friends. She was one of the first people to see photography as an artistic medium open to interpretation, rather than simply a mechanical process for recording reality. Her portraits often make a creative use of soft focus.

Canvas

A Photoshop term for the overall dimensions of the image file you are using. Like the canvas used for a painting, the Canvas may be the same size as the actual size of the picture, or it may be larger.

Canvas Size

The Canvas Size control enables you to increase the size of the canvas without affecting the pixels that make up the image itself. It can be used to add a border to a photo, for example, or to add a blank area into which more sky can be cloned.

Cartier-Bresson, Henri

Henri Cartier-Bresson (1908-2004) is regarded as one of the most influential reportage and street photographers. He was one of the co-founders of the Magnum Photos agency in 1947. He was one of the first to exploit the advantages of the Leica 35mm camera, and used it to capture brilliantly timed and composed images throughout his long career.

Cartridge film

A type of photographic film housed in a plastic cassette. Because it's light-tight, film can be loaded into a camera in daylight. 126 cartridge film was introduced by Kodak in 1963, followed by 110 film in 1972. Two later formats, Disc film and

APS film, used their own specially designed cartridges.

Catch light

A white highlight in the eye of the subject, which is a reflection of the light source. The shape, size and intensity of the highlight, as well as the number of highlights, will vary depending on the lighting setup.

CCD**(Charge Coupled Device)**

A type of imaging sensor commonly used in digital cameras, and an alternative to the CMOS sensor. See CMOS.

Centre-weighted

A type of built-in light metering system, provided as an option on some cameras. Centre-weighted meters measure light intensity across the entire image area, but bias the average in favour of light measured towards the centre of the frame. The system isn't foolproof; it's easier to predict when it will make an inappropriate reading than more sophisticated metering systems.

Channel mixer

A feature in Photoshop that enables you to adjust the red, green and blue channels to increase or decrease colour saturation, or to convert an image to monochrome.

Chiaroscuro

A term that originated in Renaissance art. It refers to a style of image that features a strong contrast between the light and dark areas of the picture.

Chimping

This is a short form of 'checking image preview'. It refers to the act of looking too frequently at your camera's LCD, rather than concentrating on the subject.

Chromatic aberration

A lens fault common in telephoto lenses in which different colours of white light are focused at slightly different distances, creating ugly coloured haloes around the edges of a photographic subject. Software can remove or reduce the effect.

Chromogenic film

A fine-grain photographic film that produces black-and-white images, but is processed using C41 colour chemistry.

Circular polariser

A type of polarising filter. Circular polarisers can be used with modern cameras without interfering with the operation of exposure metering and autofocus systems, unlike older and cheaper linear polarisers.

Clipping

Clipping occurs when the dark parts of an image become pure black or the light parts become pure white, so that image detail is lost in these areas. On a histogram, a clipped shadow or highlight is indicated by the graph being 'cut off' on the left-hand (shadows) or right-hand (highlights) side.

Clone Stamp

An image-editing tool that enables you to replace an area of the image with pixels taken from elsewhere in the image (or even another image). It's commonly used for removing blemishes and other unwanted objects from a picture.

Close-up lens

A filter-like accessory that fits on the front of the camera lens to magnify the image. This low-cost and lightweight macro accessory can be used on most types of cameras and lenses. Close-up lenses come in a variety of different strengths, usually measured in dioptres.

CMOS (Complementary Metal Oxide Semiconductor)

This is a type of imaging sensor used in digital cameras. Located at the focal plane, it converts the focused image into an electrical signal. It's similar in function to the CCD sensor.

CMYK

Cyan, magenta, yellow and black (or 'key'), the four primary inks used in commercial colour printing. CMYK also refers to the printing process itself.

Collodion process

This is an early technique for making photographic prints, invented by Frederick Scott Archer (1813-1857) in 1851, which used collodion (cellulose nitrate) to stick light-sensitive chemicals on the surface of a glass plate. The plate was exposed, developed and fixed while still wet. The process produced good results and was used widely until around 1880.

Colour channels

Every colour you see on a screen is created by a specific mix of red, green and blue light, and every printed colour by a specific formula of ink colours. In Photoshop, the component colours can be represented and seen as separate colour channels – RGB for most digital photos. See Channel mixer for more on this.

Colour filter array (CFA)

The pattern for red, green, and blue filters used over the photo sites in an imaging sensor. Usually, half the photo sites in a digital camera (which define pixels) have green filters, a quarter have red filters, and quarter have blue filters.

Colour management

An overall system that tries to ensure that

the colours of an image are displayed and output in exactly the same way, whatever the device being used.

Colour profile

Description of how a camera, printer, monitor or other device displays or records colour. It provides a universal way in which different devices can produce similar-looking results. This is sometimes known as an ICC profile, because the standards are set down by the ICC (International Colour Consortium).

Colour negative film

Film on which all original colours are recorded as their complementary colours. When the image is printed on photographic paper, the colours are again reversed to their original hue. Colour negatives have an orange tint or mask, which helps to control contrast and improves the reproduction quality.

Colour reversal film

Film processed to produce a colour positive image on its transparent base. Traditionally, images are mounted in card or plastic mounts. Also commonly known as slide or transparency film.

Colour space

The theoretical definition of the range of colours that can be displayed by a device.

Colour temperature

All light sources have a characteristic colour temperature: artificial (tungsten-filament) lights are warmer (more orange) than daylight, which is warm near dawn, turns cooler (more blue) during the day, then warms again at nightfall. Our eyes adjust for colour temperature much of the time without our realising it, so that colours look pretty consistent. Digital cameras can make



Colour wheel

Understanding how colours work with and against each other according to the colour wheel is vital for creative portraiture and other genres. Adobe has put together a great colour wheel site at <https://color.adobe.com/> and we have more colour tips on page 73.

electronic adjustments using a white balance system to neutralise colours. When they get it wrong (or you use the wrong white balance setting on your camera), a colour cast results.

Combination printing

The use of two or more negatives to make one print. The technique was first used in the mid-19th century to overcome exposure limitations in early photographic processes, although photographers such as Oscar Gustave Rejlander (1813-1875) could use dozens of images to make one epic scene.

Compact

A type of camera with a shutter mechanism built in to the lens. Compacts are generally point-and-shoot designs that are easy to carry around. Most digital compacts have built-in zoom lenses.

CompactFlash

This is a type of removable memory card commonly used in digital SLRs.

Complementary colours

Also known as 'opposite colours', these are pairs of colours that create a strong contrast. On the traditional colour wheel they are red/green, yellow/violet and blue/orange, while the CMYK and RGB models use red/cyan, green/magenta and blue/yellow.

Compression

The process of reducing the sizes of files such as digital images, so that they use less storage capacity and are faster to upload and download. See lossless compression and lossy compression.

Contact print/sheet

Contact prints are photographic images

made by laying one or more film negatives on a sheet of photographic paper, usually under a sheet of glass, and exposing it to light. In the traditional wet darkroom, a contact sheet is usually the first stage of printing an image.

Continuous autofocus

This is an autofocus setting in which the focus is constantly adjusted until the shutter is actually fired. It's especially useful for moving subjects such as in wildlife or sports/action photography, where it would be unhelpful for the focus distance to be locked as soon as it's initially found.

Continuous lighting

Lighting that remains on throughout a photo shoot, as opposed to the brief burst of illumination given by flash or strobe lighting.

Contrast-detection autofocus

See passive autofocus.

Contrast range

A measurement of the difference in brightness between the very darkest and lightest parts of an image. See brightness range.

Contre-jour

In French, literally 'against the light'. See backlighting.

Converging verticals

A term used to describe the effect of parallel lines getting closer together, particularly the two sides of a building, or a section of a building, when shooting from a low angle of view. The phenomena occurs when the camera is tilted up or down to fit the entire building in the picture.

Crop

To remove unwanted parts of an image.

Crop factor

Sensors of several different sizes are used in digital SLRs, and this size affects the angle of view offered by a particular lens. The smaller the sensor, the narrower the angle of view. The 'crop factor' is to convert the actual focal length of a lens to the effective focal length (EFL – see below). The crop factor for Four Thirds and Micro Four Thirds models is 2x; the crop factor for most popular digital SLRs (DX and APS-C) is 1.5x or 1.6x. Full-frame digital SLRs need no focal length conversion, so they have a crop factor of 1x.

Cross-processing

Sometimes called 'X-Pro', in film photography this refers to processing colour negative film in reversal film (E6) chemicals, or colour reversal film in negative film (C41) chemicals. The resulting colour shifts gave images a distinctive look. The technique was once especially popular in fashion photography. A similar appearance can be created in Photoshop by boosting contrast and tweaking colour channels.

Curves

This powerful Photoshop feature enables you to adjust the exposure and contrast of an image. By altering the shape of the curve, different areas of tone can be lightened or darkened by varying amounts. By altering the curves for each of the different colour channels, the colour balance of the image can also be altered to create special effects, or simply to correct for unwanted colour casts. Elements' version of Curves, called Adjust Colour Curves, is more limited than Photoshop's Curves.

Cyanotype

A printing process that creates a distinctive cyan-blue print, discovered in 1842 by scientist Sir John Herschel (1792-1871). It was first used in photography by Anna Atkins (1799-1871), who produced a book of cyanotype photograms made using seaweed in 1843.

D

D

A type of Tokina lens that's compatible with full-frame SLRs.

DA

Stands for Digital Auto, which features on a range of Pentax lenses that (unlike some earlier ranges) don't have a manual aperture ring. They have a 'Quick Shift' mechanism that enables you to override focus manually, even when the lens is set to autofocus.

DA*

The premium lens range from Pentax, which combines weatherproofing with the advantages of the DA range.

Dark cloth

A sheet of black material, mainly used in large-format photography. It covers the photographer's head and the camera, and allows the relatively dim image on the ground-glass screen to be seen more clearly when composing and focusing an image.

Darkroom

A light-tight room for processing and printing traditional photographs. Negatives are loaded into the processing tank in complete darkness, while a red/orange safe light can be used at the printing stage.

Daguerre, Louis

Louis Daguerre (1787-1851) was an artist and inventor who devised one of the earliest photographic processes, the daguerreotype, announced in 1839. It was made by coating a silver-plated copper sheet with light-sensitive silver iodide, and exposing it in a camera to create a positive image.

DC

This features on the range of Sigma lenses that are designed specifically for use with crop-factor SLRs, and which can't be used with full-frame models.

Decisive moment

The split-second when all the elements of a photograph simultaneously come together. The decisive moment is associated with Cartier-Bresson, who described photography as "the simultaneous recognition, in a fraction of a second, of the significance of an event as well as of a precise organization of forms which give that event its proper expression."

Dedicated flashgun

A type of flashgun that's designed to provide direct one-way or two-way communication with the camera. The amount of dedication varies enormously depending on the flashgun and camera. Increased dedication tends to provide a more accurate flash metering, as well as making the flash system easier to use successfully.

Depth of field

A measure of how much of a picture is in focus, from the nearest point in the scene to the camera that looks sharp, to the furthestmost point that looks sharp. Depth of field is dependent on the aperture used,



Compact System Camera (CSC)

These are cameras with no mirror mechanism, and are therefore smaller and lighter than D-SLRs, but still offer similar controls, high-quality images and interchangeable lenses. Depending on the model, there's either an electronic viewfinder or no viewfinder and only the LCD screen. CSCs are also referred to as MILCs (mirrorless interchangeable lens camera) or EVILs (electronic viewfinder, interchangeable lens).

the distance that the lens is focused at, and the focal length of the lens.

Depth of field preview

A device, usually a button, found on some digital SLRs that enables you to see the viewfinder image at the actual aperture you'll be using for the exposure. This gives a visual indication as to how much depth of field there is, and which parts of the resulting picture will be sharp or blurred. This is necessary because the viewfinder normally only shows the image as it would appear if the widest aperture available were used.

Depth of field scale

A scale found on some lens barrels that can be used to work out the depth of field for particular apertures, and that can be used for manual focus adjustments to maximise or minimise the depth of field.

Depth program

A program exposure mode in which the aperture and shutter speed are set automatically in order to provide the maximum depth of field, while maintaining a shutter speed that's fast enough for hand-held photography. With some cameras, the different subject distances measured by the multipoint autofocus system are also taken into account, and the focus is adjusted to suit.

Developer

A mixture of chemicals used to convert or amplify a latent image on a photographic film or print to make it visible. It's made permanent using fixer.

DFA

This features on the range of Pentax lenses that will work with full-frame 35mm film cameras as well as crop-factor digital SLRs.

DG

This refers to the Sigma lens range suitable for full-frame SLRs (but that can also be used on crop-factor models).

Di

Tamron's 'Digitally Integrated' lenses have a full-size image circle, so they are suitable for full-frame and crop-factor SLRs.

Di II

Tamron's second-generation Digitally Integrated lenses are designed for use on popular crop-factor SLRs, and are not suitable for full-frame models.

Diaphragm

Another term for the aperture. These are the adjustable blades that regulate how much light enters the lens and reaches the sensor.

Dialog

A window that pops open when you select certain commands, usually to give you the opportunity to configure settings or enter further preferences. In Photoshop and Photoshop Elements, menu commands that will open a dialog for further instructions before applying their effect are usually indicated by an ellipsis (...) after the name, such as File>Save As... Those without this, such as File>Save, will work immediately, with no dialog.

Differential focusing

Controlling depth of field to ensure that one element in the picture is sharp, while others are as out of focus as possible.

Diffraction

Scattering of light caused by deflection at the edges of an opaque object. Diffraction causes slight fuzziness in the image when the narrowest apertures are used.

Diffuser

Any material that scatters the light as it passes through it, softening the illumination and making shadows less distinct. Diffusers are commonly used with artificial light sources such as strobes and flashguns. On sunny days, clouds act as natural diffusers.

Dioptre

Optical measurement used to describe the light-bending power of a lens. The dioptre value of a lens is equal to the number of times that its focal length will divide into 1000mm. Dioptres are used to measure the magnification of close-up lenses, and of viewfinder lenses.

Disc film

A short-lived format introduced by Kodak in 1982. The disc-shaped film, housed in a plastic cartridge, contained 15 negatives measuring 11x8 mm. After each exposure, the disc rotated to the next frame. Poor image quality made it unpopular, and it was discontinued in 1999.

DNG (Digital Negative)

DNG is a raw file format invented by Adobe and used by some camera manufacturers. An advantage of DNG is that, unlike other raw formats, it isn't specific to just one camera manufacturer or model, and it isn't just a read-only format – you can save your files in DNG format too. A free DNG converter application available from Adobe at www.adobe.com/products/dng enables you to convert any raw file into a DNG.

DO

Diffractional Optics is used on a handful of Canon telephoto lenses. The technology enables these long lenses to be made smaller and lighter than equivalents using conventional optical designs.

Dodge tool

A way of lightening selected areas of the image during digital manipulation. The tool gets its name (and its spoon-shaped icon) from the traditional darkroom technique of 'dodging', where parts of a print are shielded from exposure and therefore given less light than other parts. See also Burn tool.

Doughnuts

The name given to the ring-shaped bokeh created by the unique construction of a mirror lens.

DPI

Dots per inch. Strictly speaking, a measure of the density of dots of ink that a printer lays down on paper. Compare image resolution (density of pixels) of a print or on-screen image at a certain size, measured in pixels per inch.

DPOF

(Digital Print Order Format)

A facility available on some digital cameras that enables users to mark the images from which they wish to have prints made.

D-SLR

(digital single lens reflex)

See single-lens reflex.

DT

A Sony lens with a smaller image circle, designed for use on crop-factor cameras.

Duotone

A duotone image is one made from two inks (usually black and another colour), and is often used in printed books to increase the tonal range of an image. It's also used by some fine-art photographers to add subtle colour to black-and-white photographs. A similar appearance can be achieved in Photoshop

by converting a colour image to greyscale, then choosing Image>Mode>Duotone.

DX

Tokina's and Nikon's way of marking lenses that are only suitable for crop-factor (or APS-C) digital SLRs.

Dynamic range

A term used to describe the range between the lightest and darkest points in a photograph. The range that can be recorded by a digital camera is relatively small compared with the range that the human eye can perceive.

E

Eastman, George

George Eastman (1854-1932) was an American entrepreneur and philanthropist. He patented the first paper negative roll film in 1884 before establishing Eastman Kodak in 1892, which went on to become one of the world's largest photographic companies. The popular Kodak 'Brownie' series was launched in 1900, with the famous slogan, 'You push the button, we do the rest'.

ED

A lens featuring Extra-low Dispersion glass in one or more of its elements, to help correct chromatic aberration. This abbreviation is used by Nikon, Panasonic, Olympus and others.

Edgerton, Harold Eugene

Harold Eugene Edgerton (1903-1990) was a professor of electrical engineering at Massachusetts Institute of Technology, who conducted innovative experiments with high-speed flash photography. He developed a flash tube that fired for



Dioptic correction

The facility provided on some digital cameras for adjusting the viewfinder to suit the user's eyesight. Limited adjustment is built-in, and some cameras permit further modification with the use of additional dioptre lenses.

one-millionth of a second, recording for the first time subjects such as a bullet piercing an apple.

EF

Stands for Electro Focus. This is the name of the lens mount Canon introduced on its first autofocus SLR cameras in 1987. EF lenses can be used on all Canon SLRs.

Effects filter

See filter.

EFL

(effective focal length)

A measure for comparing the angle of view and magnification of different lenses and lens settings, whatever the size of imaging chip being used. The actual focal length is converted to the equivalent focal length that would give the same angle of view on a camera using 35mm. See focal length.

EF-S

Stands for Electro Focus Short back focus, a lens mount introduced by Canon in 2003. EF-S lenses have a small image circle so they are only suitable for use on crop-factor SLRs. A modified mount means that they can't physically be fitted onto incompatible (i.e. full-frame) Canon models.

EX

Sigma's designation for its premium lens range.

Element

An individual optical lens. Most photographic lenses are constructed using a number of lens elements, placed parallel to each other along a single axis. Some are placed together in groups.

Enlarger

A projector used in a traditional wet

darkroom. Negatives are placed in the carrier, and a light inside the enlarger head projects the magnified image onto a sheet of photographic paper on the baseboard. When the exposure is complete, the photograph is developed and fixed.

Environmental portrait

A portrait shot in a subject's home or work environment in such a way that it gives an insight into the subject's character. The American photographer Arnold Newman (1918-2006) is considered the father of environmental portraiture.

EV (exposure value)

The scale used to denote the exposure required without the need to specify either shutter speed or aperture. A particular EV setting has its own set pairs of possible shutter speed and aperture. Exposure values are often quoted in combination with an ISO speed to denote a specific light level.

Evaluative metering

A metering system used on many cameras, in which light readings are taken from a number of different areas, or zones, across the image. These readings are then compared to data programmed into the camera, so it can work out an appropriate exposure setting. Information from the multipoint autofocus system is also used, to ascertain the likely position of the subject. This 'intelligent' metering system can avoid many of the failings of simpler systems. However, it's impossible to second-guess, so it can be difficult to predict the occasions where it will get the exposure wrong. It's also known as matrix metering.

EVF (electronic viewfinder)

An eye-level LCD screen, as found on

hybrid cameras, bridge cameras, camcorders, and some compacts. The image seen by the lens is electronically projected onto the screen.

EVIL (electronic viewfinder, interchangeable lens)

A type of hybrid camera that combines features of a traditional SLR with those of a compact camera. Unlike a digital SLR, this type of camera has an electronic rather than optical viewfinder. See compact system camera.

EXIF

(exchangeable image file)

Camera settings recorded by many digital cameras as part of the image file. This data automatically notes a wide range of information about the picture, including the date and time it was recorded, aperture, shutter speed, model of camera, whether flash was used, number of pixels used, metering mode, exposure mode, exposure compensation used and zoom setting. The information can then subsequently be read by suitable software. To access this information in Photoshop and Photoshop Elements, go to File>File Info.

Exposure

The total amount of light used to create an image. The term is also used to describe a single shutter cycle, that is, the process of the camera's shutter opening, closing and resetting.

Exposure compensation

A control for manually overriding the built-in exposure meter of a camera to provide more or less light to the sensor.

Eyedropper

A Photoshop tool used to sample the colour of an area, typically changing the

foreground colour to the same shade. It can also be used in some adjustment tools for setting exposure or colour balance, by clicking a particular area of tone as a reference point.

Eye relief

A measurement of the optimum viewing distance between the photographer's eye and the camera's viewfinder.

Eyepiece correction

See dioptic correction.

F

F-stop

The aperture setting on a lens. The number is the focal length of the lens divided by the diameter of the aperture. As a result, larger f-stop numbers represent narrower aperture sizes. F-stop numbers are used so that exposure settings for a particular scene can be expressed without having to know the focal length of the lens used. The term, F-stop, comes from the Waterhouse stop (a series of circular holes in strips of metal that 'stopped' some of the light passing through the lens). The system was invented by John Waterhouse (1806-1879) in 1858, but the hole sizes don't correspond with modern f-stop numbers.

f/x.x

The f-stop number is the size of the lens's maximum aperture, measured as a fraction of the focal length of the lens. On some zoom lenses there may be two apertures quoted: f/4-5.6, for example. This means that the maximum aperture of the lens gets narrower as the lens is zoomed in. The maximum aperture on the lens barrel may also be expressed as a ratio, such as 1:4-5.6.

FA

A Pentax lens that's compatible with full-frame SLRs, and that features an old-fashioned aperture ring.

False colour

A colour shown in a digital image that's different from the actual subject colour, and that often appears together with a moiré pattern. See moiré pattern.

Fast ISO setting

An ISO setting that makes the sensor more sensitive to light than usual, and thus requires less exposure than usual. Fast settings are useful in low-light situations where long shutter speeds are not suitable. A drawback is that grain-like noise within the image becomes more pronounced as the ISO speed is increased. See ISO.

Fast lens

A lens that has a wider maximum aperture than is usual for that particular focal length or zoom range, allowing a shorter shutter speed. Fast lenses are not only useful in low light; they can be invaluable for throwing backgrounds out of focus to a greater extent than usual.

Fast shutter speed

Relative term for an exposure that is shorter than average, usually set to avoid the blur that would otherwise be created by movement of the subject.

Feathering

A way of softening the edges of an area that you've selected to work on in Photoshop. It adds a transition zone of transparent pixels, which enables any background to partially show through (like with the edges of a feather). It's used so that the join between manipulated and non-manipulated areas is rendered less obvious.



Extension tube

An accessory used in macro and close-up photography that fits between the D-SLR body and the lens. The extra extension between the lens and sensor enables the lens to focus closer and to provide a higher image magnification than would otherwise be possible. Extension tubes are usually sold in sets of three, and are used singly or in combination to provide a total of seven different magnifications.

Fenton, Roger

Roger Fenton (1819-1869) was a British photographic pioneer who took some of the earliest war photographs on the battlefields of the Crimean War in 1854. He was also the founder and first secretary of The Photographic Society, later renamed to The Royal Photographic Society.

File format

The way in which a digital image is stored. When you've finished editing your images, you usually get a choice of formats to use while saving. Common file types include JPEG, TIFF, and PSD.

Fill light

In studio lighting, a fill light is used to give more detail to dark or shadow areas, and reduce contrast.

Film

In photography, film is a transparent plastic perforated strip or sheet that acts as a base for microscopic, light-sensitive silver halide crystals coated on one side with a gelatin emulsion. Black-and-white film has a single layer of silver salts, while colour film has a minimum of three layers of dye (blue, green and red), which sensitise the salts to different colours, as the scene being photographed dictates.

Filter

A general term used within Photoshop for a wide range of artistic effects and other utilities. Many are special effects, such as those that add grain and texture to an image. Others, such as the sharpening filters, are more utilitarian. Also, see optical filter.

Fisheye lens

An ultra-wide-angle lens that distorts the image in order to maximise the field of

view. On 35mm cameras, the term refers to lenses with focal lengths of around 8-15mm.

FireWire

A method of transferring data such as digital images or video between devices. FireWire 400 was first introduced by Apple in the 1990s. The most recent version is FireWire 800. A FireWire 400 cable can be connected to a FireWire 800 socket using an additional adaptor.

Fixed focal length lens

A lens that doesn't have a variable focal length, and that has a single angle of view.

Fixer

A chemical mixture used in the wet darkroom to stabilise negatives and prints after development and make them insensitive to light.

Flare

Stray, non-image-forming light that reaches the sensor, creating unwanted highlights or softening the image. Lens coatings and hoods are designed to minimise flare. However, flare can still prove a problem when shooting towards a bright light source.

Flash

A burst of artificial light used to provide all or some of the illumination for an image. Most cameras have built-in flash units, while some allow a separate flash unit to be attached via the hotshoe, or used off-camera. In studio work, large standalone flash units or strobes use mains power, and are triggered by a flash sync cable or radio signal. Flash durations are usually between 1/200 sec to 1/1000 sec and have a colour temperature of around 5,500-6,000K.

Flash synchronisation

A process that ensures that the peak output from the flash tube coincides with the shutter being fully open. On digital SLRs with focal plane shutters, full synchronisation is only possible at certain shutter speeds.

Flattening

A Photoshop term for merging all the visible layers to the background layer, reducing the file size.

Fluorescent light

The lighting produced by strip light tubes. The colour balance can vary enormously, depending on the type of tube, and manual white balance settings therefore often offer several fluorescent settings. Daylight-balanced fluorescent tubes are used in some studio lighting systems.

FO

Stands for Focus-One-touch mechanism, on Tokina lenses. It enables you to switch between autofocus and manual focus by snapping the focus ring backwards and forwards.

Focal length

Optical term describing the distance between the optical centre of a lens and its focal point. In practice, the focal length is a measure of the magnification and angle of view of a given lens or zoom setting. It's usually measured in millimetres. However, its usefulness as a way of comparing different lenses is diminished by the fact that the exact focal length required to give a particular angle of view will depend on the size of the imaging chip used by the camera in question. See EFL.

Focal plane

The flat surface upon which the image is

focused in a camera. This is the plane where the photo sites of the CCD or CMOS image sensor are positioned.

Focal plane shutter

A shutter mechanism that sits just in front of the image sensor, in the lens's focal plane. It consists of two light-tight curtains that, when using fast shutter speeds, travel across the focal plane with a thin slit between them. Light passes through this slit to expose the image sensor or film. Using shutter speeds lower than the flash sync speed, one curtain crosses the focal plane to expose the whole sensor or frame of film, followed separately by the second curtain. This type of shutter is commonly used on D-SLR cameras.

Focus peaking

An electronic visual aid in which the parts of an image in sharp focus are highlighted on a Live View screen. This function was included on Sony's NEX mirrorless cameras in 2011. It has since been introduced on other companies' new camera models, including the Leica M (typ 240) and the Olympus OM-D E-M1.

Focusing screen

The surface upon which the viewfinder image of a digital SLR is projected. Its textured surface is designed to accentuate the degree by which the image is sharp or not, thereby providing assistance when you're focusing.

4K

An ultra-high-resolution video format that delivers four times the amount of detail as 1080p full HD. It means that individual video frames, which have eight million pixels, are of a high enough quality to be printed as still images. Panasonic and Sony have both announced 4K-capable

models, and more manufacturers are due to follow suit.

Four Thirds system

A standard image sensor format introduced by Olympus and Kodak in 2002. It has a 4:3 aspect ratio (the sensor size is usually 18 x 13.5mm), while other D-SLR systems use a larger sensor with a 3:2 aspect ratio.

Format

In film photography, 'format' refers to a photographic film size and its associated camera systems. Miniature Format is 35mm or smaller, Medium Format is any film size higher than 35mm, but lower than 4x5, while Large Format is anything larger than 4x5. For file formats, see image file format.

Fox Talbot, William Henry

An inventor and pioneer of photography, Fox Talbot (1800-1877) introduced the calotype or talbotype process in 1841. His book, *The Pencil of Nature* (published in instalments from 1844-1846) was the first commercially published book to be illustrated with photographs. One of his most famous photographs, made in 1844, showed Nelson's Column in Trafalgar Square, London, still under construction.

Fps (frames per second)

Measurement of the continuous shooting rate of a camera.

Framing

A technique for highlighting a subject and giving depth to an image by using another feature within the image to form a frame around it. Examples include shooting a church tower through an archway, or a portrait of someone looking through a window frame or standing under the bough of a tree.



Fill-in flash

Flash used as a secondary light source. A fill-flash feature is an option on many cameras with a built-in flash unit. With it you can soften shadows on foreground subjects, helping to avoid problems with backlighting. Fill-in flash can also be used to enhance the colours and contrast of foreground subjects in dull lighting conditions.

Frontal lighting

Lighting directed towards the subject, and therefore positioned behind, or level, with the camera.

Full-frame

Used to describe a digital SLR sensor that has a light-sensitive area the same size as a frame of 35mm film – around 24x36mm. See sensor size.

FX

A Nikon (or Nikkor) lens that's compatible with its full-frame SLRs, as well as crop-factor ones.

G

G

Stands for Gold – a designation found on top-class Sony lenses. It's also used for current Panasonic Lumix compact system cameras and lenses.

Gain

Amplification of an electronic circuit. It's used in digital cameras and camcorders as a way of electronically boosting the sensitivity of the imaging chip in low light. See ISO.

Gamut

The range of colours that can be printed or displayed by a particular electronic device.

Gelatin emulsion

A thin coating on one side of a roll of photographic film, which contains microscopic light-sensitive silver halide particles.

Giclée

A name for digital prints made on

high-resolution large format inkjet printers, coined by the printmaker Jack Duganne in 1991. It comes from 'gicler', the French word meaning 'to spray or squirt'. The name originally referred to prints made on a prepress Iris printer, but now also includes those made on other large-format printers that use pigment-based inks and archival paper.

GIF

(graphic interchange format)

A digital file format that uses lossless compression. GIFs are sometimes used for graphics and images for use on the web. Its image palette is limited to 256 colours – much fewer than a TIFF, JPEG or raw file can contain – so its use to show photographs isn't recommended.

Gigabyte (GB)

Unit for measuring computer memory, roughly equivalent to 1,000 megabytes.

Guide Number (GN)

A number on a flash unit that measures its capacity to light a subject at a particular distance and ISO setting. Usually, based on a setting of ISO100, the guide number is determined by multiplying the flash-to-subject distance by the f-stop setting needed to correctly expose the subject at that distance. A flash with a lower guide number produces a much weaker flash than one with a higher guide number.

Grad

See graduated.

Graduated

A type of optical filter that has a dark section and a clear section. These filters – commonly known as ND grads – are used to balance the brightness in high-contrast

scenes, usually landscapes, with the dark area placed over the bright sky and the clear section over the dark foreground.

Grain

Metallic silver particles, random in shape and distribution, particularly visible in images made with black-and-white photographic film. It's present to a lesser degree in colour film. Grain is more noticeable in higher ISO film, but it's also visible in lower ISO film when making big enlargements.

Grey card

A neutral grey card, usually with 18% reflectance, is used as a standard reference when determining consistent photographic exposure. It's used by placing it in a scene to be photographed and taking a reading from it with a reflected light meter. This avoids problems of over-exposure and under-exposure.

Greyscale

A digital image in which all the colour information has been removed, leaving only black, white and shades of grey.

Grip and rip

A slang phrase for setting the camera to its highest continuous drive mode and keeping the shutter button held down to shoot as many frames as possible in a short space of time. 'Spray and pray' has the same meaning.

Ground glass screen

A sheet of glass, ground to a matte finish, which is used to look at images on large-format cameras. The image from the lens is projected upside-down on the screen. The image is examined and focused more easily by blocking out all other light with a dark cloth.

Group f/64

A group of like-minded San Francisco-based photographers, formed in 1932, which was dedicated to making clear, sharply focused images of landscapes and other natural forms. The group included Ansel Adams, Edward Weston and Imogen Cunningham. The group's name is a reference to its members' preference for using a very narrow aperture for increased depth of field.

Golden hour

Although not necessarily an hour long, this is the period of time after sunrise or before sunset in which landscape photographers particularly enjoy working because of the favourable effect of the light on their images. The main reason for the term is the warm colour of the sunlight, which, together with its reduced contrast, gives outdoor scenes an especially attractive appearance. The low angle of sunlight also creates longer shadows and reveals more texture in a landscape.

GPS

Stands for global positioning system. This geotagging feature is built into many more recently introduced camera models. Using satellite-based navigation, it records the camera's position when an image is made. This information can then be embedded in the image's metadata, allowing some software to show maps of where you took each photo.

H

Haloes

A term used to describe the glow that's created around the edges of objects when they've been over-sharpened in Photoshop or other similar photo-editing software. They are even more prevalent in high dynamic range images.

Hand tool

A tool for moving your image around when you're zoomed in and can't see all the image at once, by dragging on the image. Press the H key, or hold down the space bar, to switch to this tool quickly.

HDR (high dynamic range)

A digital imaging technique where a series of identical pictures of a scene are taken at different exposures and then combined into one image. This brings out detail in shadow and highlight areas that usually can't be captured in a single exposure, and is particularly useful for high-contrast subjects, such as brightly-lit landscapes, interiors and night scenes.

Healing Brush tool

An image-retouching tool that lays down copied pixels like the Clone Stamp tool, but in addition it analyses nearby colour and tone and attempts to blend the cloned pixels in with the surrounding area. Sometimes it produces better results than the Clone Stamp, but not always, because its blending effect will tend to blur detail. For seamless cloning, it's often a good option to use both tools.

HID

Stands for High Index Dispersion, a type of glass used in Tamron lenses that helps to minimise chromatic aberration.

High key

An image in which the bright, white tones dominate the picture.

Highlights

The brightest (whitest) areas of an image.

High speed sync (HSS)

Flash feature that allows the use of shutter



Glass

The nickname for the lens – the portrait photographer's best friend. Always buy the best 'glass' you can afford. Fast 50mm or 85mm lenses with a constant wide aperture are ideal for portrait work.

speeds with flash, faster than the usual sync speed. The flash pulses at high frequency to ensure an even exposure, even though the shutter blinds are never fully open during the exposure. The facility is useful for freezing close-up action in daylight, and for allowing the widest apertures even in bright light.

Histogram

A graph that provides an instant guide to the contrast and exposure of a picture. It maps the distribution of tones, from the darkest on the left to the brightest on the right. The scale runs from 0 (solid black) to 255 (pure white), and the height of the graph at any point represents the relative number of pixels in the image with that brightness level. The overall shape of the histogram gives you an at-a-glance indication of the tonal range of the image and the presence of any clipping. You can use tools such as Levels to adjust the shape of the histogram and thereby improve the contrast and exposure of the image.

Hotshoe

An accessory shoe with an electrical contact, for mounting and connecting a flashgun.

HSM

Sigma's Hyper Sonic Motor is used in some of its lenses to provide faster and quieter AF operation.

Hue

Another term for colour. It tells you where a colour lies on the colour wheel without telling you how bright or dark it is.

Hyperfocal distance

The shortest distance at which a lens can be focused so that depth of field stretches

to infinity for a given aperture and focal length. When focused at the hyperfocal length, the depth of field will stretch from exactly half the hyperfocal distance to infinity.

I

Incident light meter

A hand-held light meter that measures the amount of light falling on a subject.

IF

Stands for internal focusing, and is found on many lenses from many manufacturers. The lens is constructed so that it doesn't change in length as the lens is focused. It also means that the front element doesn't rotate – which can help with the use of some lens attachments, such as petal-shaped lens hoods and polarising filters.

Image file format

A standard way of encoding information for storage in a computer file. File formats used in photography include JPEG, TIFF, PSD, DNG and GIF, all of which are suitable for particular uses. See the separate entries for those formats for details of how they differ.

Image sensor

An integrated circuit chip that converts an optical image into an electronic signal. In current digital cameras, most are either CCD (charged coupled device) or CMOS (complementary metal-oxide-semiconductor) sensors.

Infinity

Optical term to describe objects that are so far away from the lens that light from them reaches the lens as parallel rays.

In practice, it's usually used to mean objects that are on or near the horizon. Represented on lenses by the mathematical symbol, ∞ .

Instamatic

The name of a hugely popular series of low-cost, easy-to-use cameras made by Kodak. First sold in 1963, Instamatics used Kodak's cartridge-based 126 film. In 1972, the company introduced the Pocket Instamatic, which used the smaller 110 film.

Inverse square law

This law particularly relates to the use of studio lights or flash, and says that if an object is twice a particular distance from a point source of light, it will receive a quarter of the illumination. For example, if your subject is two metres away, and you increase it to four metres, the resulting fall-off means you'll need four times the amount of light to keep the same exposure settings. Alternatively, you'll have to increase the exposure by two stops.

Iris

Another name for the diaphragm, or aperture, of a lens.

IS

The abbreviation used for Image Stabilization – the optical camera shake-reduction system found in a wide range of Canon lenses.

ISO

Stands for International Organisation for Standardisation. In photography, it refers to a system for measuring and specifying the sensitivity of digital imaging systems and photographic films. The higher the ISO number, the greater the sensitivity to light. Cameras have an ISO range, enabling you to choose an ISO setting that suits the

situation in which you're shooting.
Also, see ASA.

J

Jack

A socket into which a plug is inserted to make a connection, also known as a 'female' connector. A jack on a camera is used for connecting an accessory such as headphones or a remote shutter release unit. A 3.5mm mini-jack is used for connecting an external stereo mic or to connect to old TVs.

Jaggies

See antialiasing.

Joiner

A term coined by the artist David Hockney (born 1937) to describe his photo-collage work in the 1980s. Hockney's joiners combined overlapping prints, made at slightly different times and from multiple viewpoints, to make landscapes and portraits. His most elaborate joiners used hundreds of individual prints to make one collage. Other photographers creating joiners (also called 'panographs') have followed Hockney's method of assembling prints, or have combined digital images on screen using photo-stitching software.

JPEG (Joint Photographic Experts Group)

A file format used for digital images. A variable amount of compression can be used to vary the amount of detail stored and the resulting file size. It's the standard format used by digital cameras (although raw or TIFF formats may also be options). It's a 'lossy' file format, which means it tends to degrade with each save.

K

Kelvin (K)

Unit used for measuring the colour temperature of light sources, named after the 19th century physicist and engineer William Thomson, first Lord Kelvin (1824-1907). Average noon daylight usually has a colour temperature of around 5500K.

Key light

The main light on a subject used in studio photography.

L

L

Stands for Luxury, and is used to designate Canon's best professional lenses, which have superior build quality and weatherproofing.

Lange, Dorothea

Dorothea Lange (1895-1965) was an American photojournalist and documentary photographer. Her most famous image was taken in the 1930s, when she recorded the plight of sharecroppers and migrant labourers during the Depression era for the American government's Farm Security Administration. Her best-known picture, *Migrant Mother* (1936) has come to symbolise the era.

Large format

See format.

Lasso tool

A pencil-like Photoshop tool that you can use to select an area you want to work on simply by drawing around it. It's used to make very rough selections.



Ice Light

Developed by Westcott and wedding photographer Jerry Ghionis, the Ice Light is a handheld LED daylight source which runs off rechargeable batteries. It offers a wrap-around light source that reduces the need for extra equipment (including off-camera flash) and can also be tripod mounted for extra flexibility. Particularly handy for outdoor portraits (though it does look a bit like a Star Wars light sabre).

Layer

The digital counterpart of the cut-out pieces of paper in a collage or decoupage work. Layers containing cut-out objects can be stacked on top of an original image or background layer in order to create a composite image. Adjustments and effects can also be applied in the form of adjustment layers, enabling you to alter the exposure, colour, and so on, without actually altering the original. Layers can be opaque, translucent, or merged with layers in the stack below in a number of ways.

LCD

(liquid crystal display)

Type of display panel used widely on cameras to provide information to the user. High-resolution colour LCDs are capable of showing detailed images, and are used as viewing screens on digital cameras.

LD

This features on Tamron lenses that use one or more Low Dispersion lens elements to help reduce chromatic aberration.

Leaf shutter

Also known as a diaphragm shutter, it uses overlapping 'leaves' of metal, which open and close to allow light to reach the image sensor or film. It's usually located between lens elements, and is commonly found on medium- and large-format cameras.

LED

(light emitting diode)

Coloured indicator lamp used on many cameras.

Lensbaby

A selective focus lens with a flexible bellows tube section used for creating special effects. It allows the photographer to keep

part of the image in focus while the rest becomes increasingly blurred. The point of focus can be moved by pushing or pulling the lens.

Lens hood

Attaches to the front of the lens to prevent stray light from outside the image area entering the lens. The lens hood is important for preventing flare, and needs to be designed for a specific lens so as not to cause image falloff.

Levels

A tool used in digital image manipulation to adjust exposure, contrast and colour balance. Histograms are used as a guide to the corrections that need to be made to the image.

Light-field camera

Also known as a plenoptic camera, this device uses microlens-array technology to record images in a completely different way to a conventional camera. Uniquely, this allows images to be re-focused after they have been shot. The first light-field camera was introduced by Lytro in 2011.

Light meter

A device used to measure the amount of light and determine the correct exposure. Most cameras have built-in light meters that measure the reflected light from a subject, as do hand-held reflected light meters. Incident light meters measure the light falling on the subject, and readings are taken from the subject's position with the light meter pointing back towards the camera.

Light modifier

Any one of a number of devices that alters the direction and intensity of light. See reflector, softbox, snoot, and barn doors.

Light trails

Lines of light recorded in an image by a moving light source during the exposure. Examples are vehicle lights on a motorway at night, lights on a fairground Ferris wheel or someone moving a hand-held torch. They can also result from shooting images of still lights and moving the camera during the exposure.

Lomography

A photographic style originally inspired by the images produced using the low-cost Russian-made 35mm Lomo LC-A camera, introduced in the 1980s. Lomography enthusiasts include lens blur, light leaks and other camera quirks as an important part of their images. These defects are often introduced into digital photos for stylistic effect.

Long exposure

An exposure in which the camera's shutter is open for an extended time period. It may be used at night to capture movement, such as car lights on a motorway or star trails, or during daylight to blur water movement in a river running through a scene. Long exposures in daylight are usually made using a neutral density (ND) filter to prevent over-exposure.

Long-focus lens

A lens used to magnify distant subjects that has a focal length longer than the diagonal measurement of the image sensor or film being used. In 35mm terms, this is any lens with a focal length longer than the 'normal' 50mm.

Lossless compression

A process whereby the size of a digital image file is made smaller without losing information. Lossless formats include TIFF and PNG.

Lossy compression

A process in which information is lost from a digital image file to make the file size smaller. This reduces the image quality, although the result may not be noticeable. JPEG is the most common file format to use lossy compression.

Low key

An image that is dominated by dark tones.

Lytro

See light-field camera.

M

Macro

Term generally used to describe equipment for taking pictures at a closer shooting distance than usual, to provide a bigger image of the subject. Historically speaking, the term 'macro' refers to when the recorded image is life-size or larger than life-size, with a magnification ratio that is 1:1 or greater.

Maddox, Dr Richard Leach

Maddox (1816-1902) was an English photographer and doctor who invented the first successful gelatin dry plate for photography in 1871. Until then, photographers used wet plates, which had to be coated, exposed and developed in hazardous chemicals while still wet. Leach's invention made photography much less dangerous and complicated, and laid the basis for early film emulsions.

Magic Wand tool

A tool that selects pixels on the basis of their colour. Click a pixel, and more pixels of a similar colour or tone will be selected. The Tolerance setting will dictate how close in colour other pixels must be in order to be

included. A Contiguous option defines whether only adjacent pixels will be included in the selection.

Magnification ratio

The relationship between the size of the focused image and the size of the subject. If the image is life-size, the magnification ratio is 1:1.

Manual exposure

An exposure made after the photographer has selected a shutter speed and aperture of their choice, usually after taking a reading from a built-in or hand-held light meter.

Manual focus

Adjusting the camera's focus by turning the focusing ring on the lens barrel by hand. It's often used to choose a particular focus point in macro photography. It can also be essential in certain lighting situations, for example low light or mist, when autofocus can struggle to lock on to a subject.

Marching ants

The dotted lines that flicker around areas that have been selected with a Marquee tool in Photoshop.

Marquee

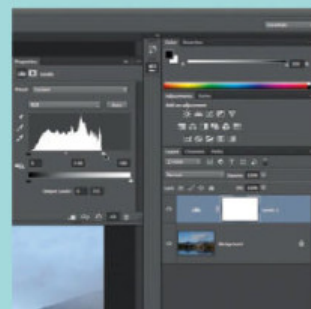
The Marquee tools enable you to make regular-shaped selections such as ellipses or rectangles. The term 'marquee' is also used to refer to the animated dotted outline that indicates the border of a selection, which is also often referred to as 'marching ants'.

Matrix metering

See evaluative metering.

Maxwell, James Clerk

James Clerk Maxwell (1831-1879) was a theoretical physicist who collaborated with



Layers panel

Formerly known as the Layers palette, this Photoshop feature enables you to manage and organise the layers in a multi-layered image, add new layers or adjustment layers, and change the way in which layers interact with each other (such as their opacity and blending mode).

photographer Thomas Sutton (1819-1875) to create the first colour photographic image in 1861. They photographed a tartan ribbon through red, green and blue filters. Then, at a lecture at The Royal Institution of Great Britain in London, the three negatives were projected together on a screen, using the same coloured filters, and combined to make one colour image.

Medium-format camera

Any camera that uses film larger than 35mm, but smaller than 4x5 (large format) film. In digital photography, the term refers to cameras that use sensors larger than a 36 x 24mm image sensor. Current examples include the Pentax 645Z and Hasselblad H5D-200c (both with a sensor size of 43.8 x 32.8mm)

Megabyte (MB)

A unit for measuring the size of computer memory and storage capacity in hard disks. Largely outmoded by the larger gigabyte unit (roughly 1,000 megabytes) as technology has improved to offer larger sizes.

Megapixel

A measurement of the resolution of a digital camera, equal to 1,000,000 pixels.

MemoryStick

Family of removable memory cards used by some digital cameras. Pioneered by Sony.

Metadata

Text information that describes an image file, such as EXIF camera settings and user-added captions.

Metered manual

An exposure mode in which shutter speed and aperture are set manually by the user, although information as to their suitability

is provided by the camera's own light-metering system.

Micro Four Thirds system

A standard for compact system cameras (CSCs) created by Olympus and Panasonic in 2008. It uses the same sensor as Four Thirds system D-SLR cameras, but doesn't use the mirror box or pentaprism. This allows a smaller, lighter and more compact body and lens design.

Midtones

All the areas of an image that aren't shadows or highlights. These are areas of brightness that, if the image were converted to black and white, would be a shade of grey rather than black or white. In a histogram, they correspond with the main central parts of the histogram graph.

Moiré pattern

In photography, moiré occurs when a detailed or repetitive pattern in the subject is overlaid with the pattern of pixels on a digital sensor. The interaction of the two patterns produces a separate, often wavy, moiré pattern. The effect is reduced by the camera's optical low pass filter.

Monochrome

Although the term applies to images made using only one colour, or shades of one colour, in photography it usually refers to black-and-white images. The 'monochrome mode' on digital cameras enables you to record directly in black and white, instead of converting colour images at the post-capture stage.

Monopod

A one-legged camera support. This doesn't provide complete stability to the camera, but enables slower shutter speeds to be used than would otherwise be possible with

a handheld camera. Used widely by sports photographers due to its manoeuvrability.

Motion blur

Out-of-focus streaking effect caused by the movement of the subject or camera during the exposure. Examples include a long exposure of a moving object passing through a static street scene at night, or panning the camera with a moving subject to create a background with blur.

Motor drive (or motorwind)

A camera facility for taking a number of pictures in rapid succession. The camera continues to take pictures as long as your finger keeps the release down, or until it runs out of memory.

Move tool

A tool used for aligning a layer by moving it around the canvas.

Mugshot

Taken from 'mug', the established slang word for 'face', the term originally applied to the stark police photographs of criminals, taken after arrest. It now refers to any simple head-and-shoulders portrait such as those found on a driving licence or passport.

Multiple exposure

An image created by two or more superimposed images.

Multizone metering

See evaluative metering.

N

Naturalistic photography

An approach put forward in the 1880s by the English photographer Peter Henry

Emerson (1856-1936). He said that photographs should be direct and simple and reflect nature. He also said they should be produced from a single negative (as opposed to the use of multiple negatives in combination printing), without being staged or retouched.

Negative

An image made on a strip or sheet of film made of transparent plastic. Tones are reversed on black-and-white negative film, while on colour negative film, colours are recorded as their complementary colours. Negatives are converted to positive images when printed on photographic paper. The first negative was recorded on paper by William Henry Fox Talbot in 1835, using his calotype process.

Neutral-density (ND) filter

An optical or electronic filter that reduces the amount of light reaching the image sensor equally across the entire field of view. It permits longer shutter speeds or wider apertures than would otherwise be possible in the lighting conditions.

NFC

Stands for near-field communication, a short range wireless technology that has been introduced on many new camera models. It enables devices to communicate by using interacting electromagnetic radio fields. Images can be transferred wirelessly between a camera and a smartphone with NFC, simply by placing the devices close together.

Niépce, Joseph Nicéphore

Niépce (1765-1833) was a French inventor who made the earliest surviving permanent image from nature in 1826. He used a camera obscura to project an image onto a pewter plate coated with light-

sensitive Bitumen of Judea. His groundbreaking 'heliograph', View from a Window at Le Gras, showed a courtyard and buildings at his house.

Noise

Unwanted interference in an electrical signal, which is seen as a grain-like pattern in dark areas of a digital image. Noise increases in digital photos when a higher ISO setting is used.

North light

The diffuse, reflected light that comes through a north-facing window, which is therefore not directly lit by sunlight. Its soft, flattering quality makes it popular in portrait photography.



OIS

Optical image stabilisation, the system used on Panasonic lenses to reduce camera shake.

OLED

Stands for organic light-emitting diode. OLED screens use a thin film of organic compound between two conductors that emits a bright light when an electric current is applied. These screens make flexible, high-quality displays that are lighter, thinner and faster to respond than LCDs. They are becoming increasingly common on high-end cameras.

1080p

A format for recording full HD video with a resolution of 1920 x 1080 pixels, offered on many current digital cameras.

Optical filter

A glass or plastic accessory placed in a



McCullin, Don

One of Britain's finest documentary and news photographers, McCullin (born 1935) is famous for his hard-hitting portraits taken in the 20th century's trouble spots. While not a studio portrait photographer, McCullin's images of the victims of war and disasters reveal a unique power and empathy.

holder or attached to the front of the camera lens. They are used to alter the image being recorded by allowing light of particular wavelengths to pass through while blocking others. Most of the traditional optical filters are only used in film photography, because their effects can be replicated by in-camera digital filters or by using post-processing techniques on a computer. The types of optical filters still used widely in digital camera capture include the polariser, UV filter, ND filter, ND grad and infrared filter.

Optical low-pass filter

A filter built into many digital cameras and located in front of the image sensor. It reduces the combined effect of moiré and false colour in digital images.

Orientation sensor

A sensor used in some cameras that detects when you turn the camera to take a vertical shot. It stores this information so that it displays the image correctly when played back on the camera LCD or computer screen.

OS

Stands for optical stabilisation, the system used on some Sigma lenses to reduce camera shake.

Over-exposure

Exposing an image for too long to suit the subject in given lighting conditions. As a result, details in highlight areas are lost or 'blown out'. Some photographers choose to over-expose when creating a particular effect. They may also use over-exposure to compensate when the camera's light meter gives an incorrect reading – when shooting snow scenes, for example.

P

Pack shot

A short form for 'packaging shot', this is a photograph of a product with labelling clearly displayed, and is usually taken for advertising or other commercial reasons. Studio setups for pack shots can vary from the simple to the elaborate.

Paint Bucket tool

A Photoshop tool that fills a complete area with a particular colour. As with the Magic Wand tool, you can adjust the Tolerance to change the effect. It can be useful for creating masks.

Painting with light

Creating images with a mobile light source. One way of painting with light is to shoot a scene in the dark, whether indoors or outdoors, with the camera on the B (bulb) setting. While the shutter is open, objects in the scene can be 'painted' with light from a hand-held flash or other light source. The other technique also involves shooting in the dark with the shutter open, but in this case the light source is moved while being pointed towards the camera, often to create a 'light trail' shape in the final image.

Palette Bin / Panel Bin

Area on the right of the interface for keeping various dialogs and information displays in Photoshop and Photoshop Elements. Later versions tend to use the term 'panel' instead of 'palette'. The feature can be minimised to buttons or hidden completely.

Pan-and-tilt head

A tripod attachment that provides independent movement of the camera in

both horizontal and vertical planes, giving the photographer greater flexibility.

Panning

Moving the camera along a horizontal plane during the exposure to follow a moving subject.

Panograph

See joiner.

Panoramic

An elongated image in which the width is at least twice the height. Panoramas are made by cropping one image, made using a specially designed panoramic camera, or by combining several images together using 'stitching software'. Aspect ratios for panoramic images can be 4:1 or higher.

Partial metering

A type of metering system where the exposure reading is taken from a small area in the centre of the field of view. It's similar to spot metering, but the reading is taken from a larger area of the image.

Passive autofocus

An autofocus system that adjusts the focus of the lens by analysing the image itself, rather than actively measuring the subject distance. Passive autofocus is used by most digital cameras, and is also known as phase-detection or contrast-detection autofocus.

Parallax

An effect in which the image seen through a camera's lens is not the same as that seen through the viewfinder, resulting in parts of the scene missing in the photograph. It's found in any camera in which the viewfinder and lens are separate, such as Leica rangefinder and twin-lens reflex cameras.

PC-E

Stands for perspective control-electronic. It's used to designate Nikon's range of tilt-shift lenses, which enable you to move the front elements on the lens to avoid or exaggerate lens distortion. These lenses are commonly used in architectural photography to ensure vertical lines remain parallel in the picture.

PC lens

Stands for perspective-control lens, another name for a shift lens.

PC socket

A simple electrical connection socket found on some D-SLRs for connecting a flash to a camera to enable synchronisation. It's widely used for connecting studio flash.

Pellicle mirror

A lightweight, thin, translucent mirror used in Sony's Single Lens Translucent (SLT) cameras. In this design, part of the light coming through the lens is diverted to an autofocus unit, and part goes to the digital sensor. This allows the photographer to see a continuous image through the viewfinder during exposure. It also avoids vibration and noise from the movement of a mirror.

Pentamirror

A low-cost alternative to the pentaprism (see next entry) used in the construction of some D-SLRs. They offer the same functionality, but use mirrors for the viewfinder construction rather than a prism.

Perspective

Perspective is used to translate a three-dimensional scene into a two-dimensional image. It gives the viewer a sense of depth in the image, for example, through the use of converging lines in a landscape. Perspective allows us to

interpret the size and distance between objects, relative to the camera's viewpoint.

Phase-detection autofocus

See passive autofocus.

Photobomb

To appear in the background of an informal portrait and upstage the person being photographed, without them being aware.

Photo book

A book largely consisting of photographs. It's a means by which photographers have displayed their work since the earliest days of the medium. Landmark photo books of the past have included Robert Frank's *The Americans* and Cartier-Bresson's *The Decisive Moment*. More recently, the ability to create a personalised photo book has come within everyone's reach via online companies such as Blurb, Snapfish and Photobox.

Photogram

A photographic image created by placing an object on a sheet of light-sensitive paper and exposing it to light. When the paper is developed, parts of the object that light rays cannot pass through are recorded as pure white, while translucent parts might be recorded as shades of grey.

The technique goes back to photography's earliest days. The artist and photographer Man Ray (1890-1976) later produced many such images, which he called 'Rayographs' or 'Rayograms'.

Photojournalism

News journalism using a camera to record events. The 'golden age' of photojournalism's lasted from the 1930s to the 1950s, before television took over as the main source of news, but it still plays an important role in the media.



Pentaprism

The five-sided prism used in the eye-level viewfinder of SLR and D-SLR cameras. It ensures that the image appears the right way up and the right way around in the viewfinder, correcting the effects of the mirror and the lens.

Photomerge

A group of 'automated' features designed for combining a number of similar or related shots together, including Photomerge Panorama for combining an overlapping sequence to create a panoramic view. Elements includes additional Photomerge tools not included in Photoshop, such as Photomerge Group Shot (for combining the best features from a series of near-identical group portraits).

Photomicrography

Photographic images of things invisible to the naked eye, created using a microscope. D-SLR cameras are connected to a microscope using an adaptor, and the degree of magnification is determined by the power of the microscope.

Photoshop

Industry-standard software program produced by Adobe that enables photographers to edit digital images on screen and save them as a JPEG, TIFF, PNG or GIF. It was initially named Display, and was created by Thomas and John Knoll in 1988.

PictBridge

A system for printing directly from a camera to a compatible printer without the need for first uploading images to a computer.

Pictorialism

An artistic approach to photography, dominant during the late 19th and early 20th century. Instead of being straightforward documents of reality, photographs were given a more painterly, soft-focus appearance. Processes such as bromoil, gum bichromate and platinum printing, which involved manipulating a photograph's tones and texture using

brushes, pigments and inks, were popular among Pictorialists.

Pincushion distortion

A lens fault or aberration that causes parallel lines in an image to bow inwards towards the centre, and is seen when shooting with telephoto lenses. The effect is similar to one you'd see if an image was printed on a pincushion. It can be corrected using post-capture software such as Photoshop.

Pinhole camera

A camera that uses a small hole instead of a lens to project an inverted image on to photographic film or a digital sensor. Exposures are usually manually operated and can range from several seconds to hours in duration. D-SLRs can be converted to pinhole cameras by replacing the lens with a piece of plastic drilled with a hole of around 0.3mm in diameter. Alternative pinhole cameras have been made with anything from wheelie-bins to shoe boxes.

Pixelated

A digital image in which individual pixels can be clearly seen, either due to very low resolution or high magnification of a small part of an image. Pictures are sometimes deliberately pixelated, for example when someone's face is obscured in a newspaper for legal reasons.

Plugin

A piece of software that adds functionality to an existing computer program. Plugins are available for many digital image-manipulation programs, including Photoshop, Photoshop Elements and Lightroom, providing an increased range of effects and transformations. One such plugin is Adobe Camera Raw.

Polariser

A filter that only transmits light vibrating in one plane. It can be used to deepen the colour of part of a picture, such as the sky. It can also be used to eliminate or reduce reflections on non-metallic surfaces, such as water or glass. It must be rotated in front of the lens until you achieve the desired effect. See circular polariser.

Positive

An image that gives an accurate representation of the composition, tones and colours of the original subject being photographed, as opposed to a negative in which the subject's composition, tones and colours are reversed.

PPI

Pixels per inch. A measure of the resolution (density of pixels) in a photo print or on-screen image.

Predictive autofocus

A sophisticated autofocus setting on cameras where the focus is not only adjusted until the shutter is actually fired, but continues to be adjusted during the delay between pressing the shutter and the picture actually being taken. This enables the camera to focus more accurately on moving subjects.

Prefocusing

A manual focusing technique used for photographing moving subjects. The lens is focused on a point or at a distance, which you anticipate the subject is going to move through. The shutter is released when this point is reached.

Previsualisation

A term first introduced by pioneering photographer Ansel Adams, which he defined in his book *The Camera* (1980) as

“the ability to anticipate a finished image before making the exposure”.

Prime lens

A non-zoom lens, that is, a lens with a single and fixed focal length.

Program exposure

Any exposure mode where the camera defines both the aperture and the shutter speed.

Program shift

A program exposure mode in which the camera sets the shutter speed and aperture automatically, but the photographer has the option of altering the bias between the two readings to set a preferred shutter speed or aperture without changing the overall exposure.

PSD

Photoshop's (and Photoshop Elements') own file format, which preserves components such as layers and transparency that aren't supported by some formats (including JPEG). It's worth saving an edited photo as a PSD if you might want the option to revisit layers or adjustment layers at a later time.

Puppet Warp tool

First introduced in Photoshop CS5, this tool allows you to adjust or radically change the shape of parts of an image. Subjects can be selected and altered without affecting the background.

Push/pull processing

In film photography, push processing means increasing the film's speed by shooting with shorter exposures than recommended and increasing the development time proportionately. This allows photographers to work in lower light

conditions, but increases the grain size. Pull processing means using longer exposures than recommended and reducing development times, to give a negative with reduced contrast and grain.

PZ

Stands for power zoom, a servo-assisted zoom facility found on some Panasonic compact system camera lenses.

PZD

Stands for piezo drive, a type of ultrasonic motor used in Tamron lenses to provide fast, quiet AF.

Q

Le Querrec, Guy

Guy Le Querrec (born 1941) is a French photographer best known for his documentary work with jazz musicians. He joined Magnum Photos in 1976 and began experimenting with film shortly after. He won the Grand Prix de la Ville de Paris in 1998.

Quick-release plate

A facility for attaching and removing a camera from a tripod. A plate attaches to the camera using the traditional screw-in arrangement, then the plate slots into a recess on the tripod.

R

Rangefinder

A camera with a separate lens and viewfinder, linked by a rangefinder mechanism. When looking through the viewfinder, two separate images are shown, one of which moves when the focus ring is turned. When the two superimposed



Pixels

Every digital photograph is made up of millions of square-shaped dots called pixels (the term derives from “picture elements”). Like the tiles in a mosaic, they blend together to create a photorealistic image. Zooming into your images using the Zoom tool in Photoshop/ Elements enables you to see, and then edit, each of these building blocks if you choose.



images are perfectly aligned, the image is in focus.

Raw

A file format option provided by digital SLRs and some other top-end digital cameras. Image data is stored in a semi-processed state and needs to be fully processed on a computer. Raw files enable exposure compensation, image contrast, colour balance and other settings to be altered after the initial exposure, while still retaining maximum image quality. Raw images also offer a greater tonal range than the alternative JPEG recording quality options. Raw isn't an abbreviation, or even a single file type like JPEG; the format varies from manufacturer to manufacturer, and sometimes from camera to camera. Most current Canon models use CR2, and Nikon models use NEF.

Reciprocity

The reciprocity law states that the density of a photographic image is in direct proportion to the intensity of light (aperture setting) and the duration (shutter speed). For example, if the correct exposure for a subject is 1/125 sec at f/4 and the aperture is increased by one stop to f/2.8, the shutter speed must be correspondingly decreased by one stop to 1/60 sec to maintain the same image quality, and vice versa.

Reciprocity failure

In film photography, when shooting with very long or very short exposures, the reciprocity law (see above) can break down, leading to reciprocity failure. In these cases, extra exposure might be needed to compensate, as specified by the film manufacturer. Reciprocity failure doesn't occur with digitally captured images.

Red-eye

An effect often caused by a camera's built-in flash. The flash light reflects from the retina of a subject's eyes and gives them a bright red colour. It can be reduced or corrected in-camera, or at the post-processing stage.

Reflected light reading

The most frequently used type of exposure meter reading, which measures the amount of light reflecting from a subject. An alternative approach is to use an incident light meter, which measures the amount of light falling on a subject.

Reflector

A piece of card or other flat material that reflects and increases the amount of illumination from a light source. Reflectors can be white, silver or gold, and are often used to 'bounce' light into shadow areas and make them brighter. An umbrella-shaped reflector on a studio light is used to create softer and more diffuse illumination.

Rembrandt lighting

A studio portrait lighting technique named after the Dutch painter Rembrandt van Rijn (1606-1669), who often used it. It refers to lighting one side of the face so that it creates a triangle of light on the opposite cheek. A reflector is sometimes used to bounce light on to the side of the face in shadow.

Reportage

The act or technique of news reporting. In photography, the term refers to the art of telling a news story through pictures. Many wedding photographers offer 'reportage style' pictures. This simply means that the day's events are approached as if it were a news event, and recorded in an informal and unobtrusive way. See photojournalism.

Resize

To create a new copy of an image with a different file size or resolution (pixel count).

Resolution

A measure of the density of pixels in a printed or on-screen image, usually expressed in terms of pixels per inch (ppi). A resolution of 300ppi is widely regarded as the optimum for professional-quality printing. Monitors typically display images at between 72 and 96ppi, although this can vary with monitor size and other factors. Changing a photo's resolution in the Image Size dialog in Photoshop won't change how big it looks on-screen, only in print.

RF

The rear focus feature is found on super telephoto lenses. With rear focus, the group of elements nearest the camera are used to determine the point of focus, providing faster autofocus.

RGB

Stands for red, green and blue. These are the three primary colours used by a digital camera to record a picture. Some tools can access and edit each of the three colour channels separately.

Rim lighting

Light from behind or to the side of a subject that gives a thin line of light around some or all of the subject's edge, which sets it clearly apart from the background.

Ring flash

A flash lighting system that uses a circular flash tube attached to the front of the lens to provide even, shadowless lighting. Ring flash is often used in macro photography, but is sometimes used in other kinds of photography including portraiture. Oversized ring flashes are available for

studio use, providing doughnut-shaped catch lights when used for portraits.

Rule of thirds

One of the best-known compositional 'rules', in which an image is divided, horizontally and vertically, into three parts, using two equally spaced lines. Important elements of the picture are then placed on one or more of these lines, which creates a stronger and more visually appealing composition than simply centering the subject. The term has its origins in painting, and was first written down by the artist John Thomas Smith in 1797.

Roll film

A photographic film wound on a spool and protected from light with paper backing. The most commonly used type is 120 roll film. It's used in cameras shooting 6x4.5, 6x6, 6x7 and 6x9 negative sizes, plus panoramic cameras.

S

Sabattier effect

A wet darkroom effect in which an image is processed so that it's partly a normal positive image and partly a negative. It was first described in the 1860s, but became well-known in the work of Man Ray (1890-1976). His assistant, Lee Miller (1907-1977) accidentally turned on a light while developing a print, but Ray liked the effect and consciously used it in his work. He called it 'solarisation'. The Sabattier effect is easily recreated using Photoshop, and looks best applied to a black-and-white image.

Safelight

A red/orange lamp used to light a traditional wet darkroom when printing black-and-white photographs. It's safe to use

at the printing stage because photographic paper isn't sensitive to red/orange light.

SAM

Stands for smooth autofocus motor, which has been used in recent Sony Alpha lenses.

Saturation

The strength of a colour or hue. An increase in saturation gives a more intense colour. Too much saturation, and the image will look unreal. An image with no saturation whatsoever will be black and white.

Scale

Scale gives us a sense of the size of an object or environment in an image, by using another object in the scene as a frame of reference. For example, by including a person in a landscape, the viewer is given a strong idea of the relative size of that landscape.

Scheimpflug principle

Theodor Scheimpflug (1865-1911) stated: "If the lens plane is tilted down, when the extended lines from the lens plane, the object plane and the film plane intersect at the same point, the entire subject plane is in focus." This principle comes into play when using tilt-shift lenses or tilt-and-swing movements on view cameras. In practice, it means that if you're photographing a landscape, the lens can be tilted forwards until the plane of focus runs parallel to the ground. As a result, depth of field is vastly increased, even when shooting with the lens wide open.

Scratch disk

Hard disk space used by Photoshop while processing an image to temporarily store information and make the process faster. It's used, for example, to store the history states that are essential for using the History panel.



Rear-curtain sync

Flash feature found on some D-SLRs and flashguns that synchronises the flash output when the second shutter curtain is about to close. Usually, the flash fires at the point where the first shutter is fully open. The facility gives more natural-looking images when using flash in conjunction with slow shutter speeds.

Screen grab

Also called a screen shot or screen capture, this is an image of all or part of a computer monitor display that can be saved as a graphics file.

SD

Super-low dispersion, the glass used in Tokina lenses to reduce chromatic aberration.

SD (Secure Digital) card

A type of removable memory card used in some digital cameras.

SDHC**(Secure Digital High Capacity)**

A type of SD card that has a higher maximum capacity than standard SD cards (up to 32GB).

SDM

Supersonic drive motor, Pentax's fast, quiet focus motor.

SDXC (Secure Digital Extended Capacity)

A type of SD card that has an even higher maximum capacity than SDHC cards (up to 2TB).

Second curtain sync

An alternative term for rear-curtain sync.

Secondary mirror

A mirror used in digital SLRs to project some of the light passing through the lens to exposure and autofocus sensors.

Selenium tone

A chemical treatment applied to a silver-based black-and-white print in a wet darkroom that changes some of the metallic silver to silver selenide. Depending on dilution and the type of printing paper,

tones may range from red-brown to purple-brown. The appearance of the effect can now be simulated in post-capture software on a computer. Photoshop CS6 and CC includes selenium toning among its range of toning presets.

Selfie

A modern term for self-portrait, a genre becoming increasingly popular in the age of the smartphone camera.

Self-timer

A camera facility that incorporates a delay between the pressing of the trigger and the beginning of the exposure. It has traditionally been used to enable the photographer to appear in the shot. It can also be used as a way of minimising the vibration caused by pressing the camera shutter, when shooting a long exposure with the camera mounted on a monopod or tripod.

Sensor size

The dimensions of the CCD or CMOS sensor in a digital camera vary greatly according to the type of camera. This has a major impact on image quality. Larger sensors collect more light and produce images with greater dynamic range and less noise than smaller sensors. Smartphone camera sensors measure around 4.5 x 3.4mm; compact camera sensors are around 6.1 x 4.5mm; D-SLR sensors are around 23.5 x 15.6mm, while a 'full frame' 35mm sensor measures around 36 x 24mm. A medium-format sensor (such as in the Pentax 645Z) measures around 44 x 33mm.

Sepia tone

A chemical treatment used in traditional photography that converts metallic silver in a black-and-white photograph to silver

sulphide. It has the effect of changing shades of grey into shades of reddish-brown. The appearance can easily be created in digital images, either in-camera or using Photoshop.

720p

A high-definition video recording format with a resolution of 1,280 x 720 pixels, offered on many of the more recent digital cameras.

Sharpening

Sharpening boosts the contrast around the edges of objects to increase definition, which helps counter the inherent softening effect of digital capture. Inkjet printing has a further softening effect, so if you're going to print your image, it will need more sharpening than it would need for on-screen viewing. Over-sharpening can be a problem, leading to undesirable haloes.

Sheet film

Film used in large-format cameras, including 5x4 and 10x8 equipment, which is supplied in boxes of individual sheets.

Shutter

A device for allowing light to pass through a camera lens to the digital sensor or film, usually for a precise period of time. See also leaf shutter and focal plane shutter.

Shutter lag

The delay between the photographer physically pressing the shutter and the exposure actually being made.

Shutter priority

A semi-automatic exposure mode in which the shutter speed is set by the photographer. The aperture is then set by the camera to suit the metered light readings taken by the camera.

Shutter speed

Also called exposure time, this is the length of time the camera's shutter is open to allow light coming through the lens to reach the image sensor or film.

Side lighting

This is illuminating a subject from one side across the camera axis, either using natural or artificial light, while the other side remains in shadow. It's often used in portraiture to give texture and depth to a subject. It can give a dramatic look, especially against a dark background. If desired, shadow areas can be lightened by using a reflector.

Silver halide

The light-sensitive chemical compound that, when coated on photographic film or paper, enables images to be recorded.

Single lens reflex (SLR)

A camera that uses a pentaprism and mirror to show the exact image being seen through the lens. When the shutter is released, the mirror flips up to allow the image to pass through to the sensor or film.

Slave

Device that triggers a flash unit automatically when another flash is fired. The slave uses a light-sensitive photoelectric cell, and cuts down on the number of cables needed in a studio.

SLD

Stands for super-low dispersion – lens elements in Sigma lenses that reduce chromatic aberration.

Slow lens

A lens with a narrower than average maximum aperture for the focal length. As a result, shutter speeds at the

maximum aperture are longer than with 'faster' lenses.

Slow sync flash

Technique in which a slow shutter speed is used in conjunction with flash. The flash usually provides the main source of illumination, but the ambient light creates a secondary exposure that can be useful in suggesting movement, or for providing detail in a background that would otherwise have looked unnaturally dark.

SLT

Stands for Single Lens Translucent. This is a proprietary name for Sony Alpha cameras that use a pellicle (fixed, translucent) mirror, electronic viewfinder and phase-detection autofocus system.

Smc

Stands for super multi coating, a seven-layer coating used on Pentax lenses to reduce light reflected by the lens itself.

Snapshot aesthetic

A style of fine-art photography that uses a seemingly casual, snapshot appearance, and focuses on everyday subject matter. Photographers using this approach have included William Eggleston (born 1939), Nan Goldin (born 1953) and Wolfgang Tillmans (born 1968). It was particularly popular in 1990s fashion photography.

Snoot

A tube-like attachment in the shape of a cone or cylinder, which fits on the front of a flash unit or studio light. It enables the photographer to control the direction and width of the light so that it concentrates on, or isolates, a subject.

Social documentary

Photographic genre that concentrates on



Shift lens

An interchangeable lens available for a small number of D-SLRs and medium-format cameras. The lens provides a limited range of camera movements, including a facility for the lens to be shifted upwards to avoid converging verticals when photographing tall subjects, especially buildings. Also known as a PC lens.

recording the everyday lives of people from different nationalities, cultures and social classes. Social documentary projects often have a particular purpose, such as the photographs of Lewis Hine (1874-1940) highlighting child labour in the early part of the 20th century, or Sebastião Salgado's 1993 project on the conditions endured by workers in different countries around the world.

Softbox

An enclosure around a flash or continuous light. The insides are lined with reflective material while the square or round front screen is made of a white opaque material that diffuses and softens the light. Softboxes can measure anything from 40cm to 2m across the front, and are often used instead of umbrellas for diffusing harsh flash light.

Soft focus

Slightly blurred and lacking in sharp definition. Images can be 'soft' due to a lens flaw, or made deliberately so to give a romantic 'glow' to an image. It can be achieved in-camera by attaching a soft-focus or diffuser filter to the lens, or by shooting through a piece of translucent material (for example, a section cut out from a pair of tights). It can also easily be added using post-capture software on a computer.

Solarisation

See Sabattier effect.

Sontag, Susan

Susan Sontag (1933-2004) was an American writer, filmmaker and prominent activist, whose series of essays collected in the book, *On Photography* (1977), was a groundbreaking critique of the photographic medium.

Soup

Slang term for developer.

SP

Stands for super performance, a long-standing tag found on top-of-the-range Tamron lenses.

Spot meter

Exposure metering system in which a meter reading is taken from a very small area in the centre of the frame.

sRGB

RGB colour space frequently used by digital cameras, but providing a narrower range of colours, or 'gamut', than the Adobe RGB space.

SSM

Stands for supersonic motor, used for high-speed autofocus in top-of-the-range Sony lenses.

Standard lens

A focal length of lens roughly equal to the diagonal of the image sensor area. Typically, standard lenses have an effective focal length of around 50mm.

Steichen, Edward

Edward Steichen (1879-1973) was an American fashion and portrait photographer. As Chief Photographer at Condé Nast publications in the 1920s and 1930s, he was the most famous (and reputedly the highest paid) photographer in the world. He was Director of Photography at the Museum of Modern Art in New York from 1947-1962 and in 1955 organised the Family of Man exhibition, seen by over nine million people.

Still-life photography

Following in the centuries-old tradition

of still-life painting, still-life photographs focus on single or small groups of objects. They can be shot indoors or outdoors, using daylight or artificial light, and are usually carefully arranged by the photographer. Notable still-life photographers include Edward Weston (1886-1958) and Irving Penn (1917-2009).

Street photography

Photographs taken in public places that record human behaviour or interaction in a way that comments on society or life in general. Street photographers aim to capture life as it happens and usually take pictures when people are unaware. Those who have worked in this broad genre include Henri Cartier-Bresson (1908-2004), Robert Frank (born 1924) and Garry Winogrand (1928-1884).

Stieglitz, Alfred

An important advocate for photography as an artistic medium, Stieglitz (1864-1946) formed the Camera Club of New York in 1896 and edited the magazine *Camera Notes*. He formed the Photo-Secession in 1902, a group of leading photographers that argued that artistic expression was the most important thing about photography. His ideas influenced a generation of photographers.

Stitching

Combining two or more overlapping images of a subject to create one seamless panoramic or high-resolution image. It can be achieved via dedicated software programs such as Autostitch or Canon's Photostitch, or using the Photomerge feature in Photoshop.

Stop

A unit of exposure. Changing exposure by a single stop is equivalent to doubling or

halving the amount of light reaching the image sensor. The distance between each of the standard aperture settings (f/2.8, f/4, f/5.6, f/8, f/16 etc.) is a full stop. Digital SLRs usually provide a number of intermediate half-stop or third-stop settings. Also, see f/X.X.

Stop down

Close down the camera's aperture. The opposite term is 'open up'.

Strobe light

Also called a stroboscopic lamp, this light source produces flashes of light (usually around 200 microseconds in length) at regular intervals. In photography, it's been used to make high-speed images of subjects that move too fast for the eye to see, such as a bullet zipping through the air. Strobe lights have also been used to capture multiple images of a moving subject in one image, for example in the photographs of dancers by Gjon Mili (1904-1984).

Superzoom

A lens with an unusually large focal length range. Current superzoom examples available for D-SLR cameras include the Tamron 80-270mm f/3.5-6.3 and the Sigma 18-200mm f/3.5-6.3. Some of the largest superzooms are found on bridge cameras; the Panasonic Lumix DMC-FZ70 has a 60x optical zoom, for example, which is equivalent to 20-1,200mm. Bridge cameras themselves are sometimes called 'superzooms' or 'ultrazooms'. See bridge camera.

Swinger, Polaroid

A name used on some of the affordable and easy-to-use range of instant cameras produced by the Polaroid Corporation in the 1960s and 1970s.

SWM

Silent wave motor, the high-speed quiet autofocus motor used on Nikon's AF-S lenses.

Sync speed

The fastest shutter speed that can be set on a camera that enables synchronisation with the flash. See flash synchronisation.

T

Table-top photography

Images of small objects or a miniature scene, arranged on a table top.

Talbotype

See calotype.

Teleconverter

A supplementary lens used between a primary lens and the camera body to increase the focal length range of the primary lens. For example, a 1.4 teleconverter on a 200mm lens will increase the focal length to 280mm, but causes a corresponding reduction in the maximum aperture size.

Terabyte (TB)

Unit for measuring computer memory or disk storage capacity, which is roughly equivalent to 1,000 gigabytes.

TFT (thin film transistor)

High-quality colour LCD technology, widely used for rear displays on digital cameras.

Thumbnail

A small, low-resolution version of a larger image. It's often used in image management applications such as Adobe Bridge and Organizer to make it easier and faster to search through and preview your photo



Telephoto

A term generally used to describe any long-focus lens (in 35mm photography, a lens with a focal length of 85mm upwards). However, telephoto technically refers to a long-focus lens in which the physical length of the lens is shorter than its focal length, a design feat achieved by its internal lens assembly.

collection. The small representations of each layer in the Layers panel in Photoshop and similar software are also referred to as thumbnails.

Three-quarters lighting

Used in portraiture, this style of lighting is created by placing a light at approximately 45 degrees from each side of the centre line of the face. It lights three quarters of the face, leaving a shadow area along the side opposite to the light that gives the face depth and volume.

TIFF (Tagged Image File Format)

Digital image format used to record files with maximum available detail. Files can be large, although this can be reduced using lossless compression.

Time exposure

See long exposure.

Time-lapse

Technique where pictures are taken of the same subject at regular intervals, then combined into moving video footage. Some time-lapse photographers record an event that takes place over a long period of time, such as a butterfly emerging from a chrysalis or a flower opening its petals.

TLR

Stands for twin-lens reflex. A TLR camera has two lenses of the same focal length; one is used for taking the picture while the other provides the image for the waist-level viewfinder, seen via a 45-degree mirror. The two lenses are connected so that focusing is the same on both lenses.

Tog

Short form for 'photographer'.

Toy camera

An inexpensive and easy-to-use film camera, such as the Holga, Lubitel, Lomo LC-A and Diana. Their lens quality and general build leads to vignetting, image blur, distortion and light leaks, but many photographers enjoy incorporating these flaws into their images for artistic effect.

Tone mapping

A technique used in image processing to reduce the range of tonal values in a high dynamic range image, so it looks more natural when shown on a computer monitor or in print.

Toning

Changing the colour of a black-and-white print or digital image. In traditional photography, black-and-white prints are usually toned using chemicals to change the metallic silver in the print emulsion to a silver compound. This happens in sepia and selenium toning. Other processes, such as platinum and gold toning, are known as metal-replacement toners. Similar effects can be produced in digital images using post-processing techniques.

Transform

A Photoshop tool used to scale, rotate, reduce, enlarge, distort or change the perspective of a layer, selection or shape.

Travel photography

A genre of photography that concentrates on documenting the landscape, people, culture and customs of a country.

Tripod

A three-legged camera support.

Tripod bush

Threaded socket found on the base

of cameras, used for attaching tripods and other accessories.

TS-E

Tilt-shift electronic – Canon's range of perspective control lenses. (See PC-E.)

TTL (through the lens) metering

An exposure metering system in which the intensity of light is measured through the camera lens.

Tungsten lighting

A type of bulb lighting that has a warm colour temperature of between 2,600 and 3,500K.

Tv (time value)

Abbreviation used for shutter priority on some cameras.

U

UD

Stands for ultra-low dispersion, a type of glass used in Canon lenses to reduce chromatic aberration in the image.

Umbrella

An umbrella is used in a studio to reflect and diffuse light from a flash unit, creating a softer and more even light. The most common types are the white shoot-through umbrella, which is used between the flash and the subject, or the black umbrella with a reflective silver or white underside that bounces flash light back on to the subject.

Under-exposure

An insufficient exposure for the subject to retain all the shadow details, so that darker areas become black or almost black.

The greater the under-exposure, the darker the image. This may be a conscious choice for artistic reasons.

Underwater housing / waterproof housing

A sealed container specifically made to protect particular cameras from damage in underwater photography, and that allow controls to be accessed and operated as normal.

Unsharp Mask

One of the most popular Photoshop tools for increasing sharpness in a digital image. It gets its curious name from a traditional print process, where a soft focus negative is sandwiched with the sharp original in order to increase edge contrast.

USB 3.0

The third version of the Universal Serial Bus standard for connection and communication between computer peripherals (including digital cameras and printers) and personal computers. It was released in 2008 and was further updated to USB 3.1 in 2013.

USD

Stands for ultrasonic silent drive, Tamron's fast, quiet AF motor.

USM

Stands for ultrasonic motor, a fast, low-noise autofocus motor used by some Canon lenses.

V

Variable contrast

A type of photographic printing paper that, in the wet darkroom, allows a range of contrast grades to be produced by

changing the colour of the filter in the enlarger head.

VC

Stands for vibration compensation, the name of the optical camera shake-reduction system fitted on some Tamron lenses.

Vibrance

A slider available in Adobe Camera Raw and Photoshop that enables you to increase the saturation of colours. It doesn't increase saturation universally – it concentrates on colours that are not saturated already, with a more limited effect on colours that are already intense. This often leads to a more visually pleasing result.

View camera

A large-format film camera that uses sheet film. Depending on the camera design, film sizes can range from 5x4 inches to 20x24 inches. All view cameras have a front standard with a lens mount and a rear standard with a film holder and ground glass screen for focusing. Both standards can be moved backwards and forwards and at different angles to alter perspective, focus and depth of field. They are connected by a flexible and extendable bellows. View cameras can be used with digital backs instead of film.

Vignetting

Darkening of the corners of an image. This appearance is often deliberately created to highlight a subject in the centre of the image, and can be applied by digitally burning in corners in Photoshop. It's also commonly seen in images taken with toy cameras such as the Holga. If vignetting is unintended, it's usually due to lens fall-off, and can be corrected using post-processing software.



UV filter

An optical filter that absorbs ultraviolet (UV) radiation. It can be used to improve visibility and quality in mountain and maritime landscapes. Many use them to protect the front of the lens.

VR

Stands for vibration reduction, Nikon's name for its image-stabilisation system.

W**WB**

An abbreviation for white balance. See white balance.

Watermark

An element embedded in a digital image, such as the photographer's name or a symbol, to show ownership and prevent images being used without the copyright owner's permission.

Weston, Edward

Edward Weston (1886-1958) was one of the major American fine-art photographers of the 20th century. His aim was, he said, to "make the commonplace unusual." His photographs were clear and detailed representations of landscapes, portraits, nudes, and, most famously, still-life subjects such as seashells and peppers.

White balance

Digital camera system that sets the colour temperature for the scene being photographed. This can be set automatically, with the system attempting to set the colour so that it looks normal to the human eye. Most D-SLRs also offer a wide selection of manual white balance settings – where the WB can be set from a reference source (such as a piece of white card), or to a particular Kelvin value, or to a lighting type (such as sunny daylight or tungsten bulb lighting).

Wide-angle lens

A lens with a focal length shorter than the

'normal' lens (that is, the lens that gives the most true-to-life field of view) for a given format. In the 35mm format, focal lengths from 35mm to 24mm are considered wide-angle, while lenses from 21mm to 14mm are generally described as ultra wide-angle.

WR

Weather resistant – a term found on certain Pentax lenses.

Wratten number

A code for labelling optical filters, named after the inventor Frederick Wratten (1840-1926). Each separate colour has a number (orange filters, for example, have the number 81) and some have letters to indicate the strength of the filter (an 81EF is much stronger than an 81A, for example).

X**XLD**

Stands for extra low dispersion, the glass used in some Tamron lenses to reduce chromatic aberration.

XMP

Stands for extensible metadata platform. A labelling technology used by a number of image-editing programs, including the Photoshop family. It records information about a file, and is usually embedded within the file itself. With raw files, the XMP information is recorded separately.

XR

Stands for extra refractive, a type of glass used in Tamron lenses. It can bend light at wider angles than normal glass, helping to make the overall size of the lens smaller.

Y**Yellow filter**

In film photography, yellow filters were often used by black-and-white landscape photographers to darken a blue sky and brighten the landscape.

Yevonde, Madame

Madame Yevonde (1893-1975) popularised the use of colour in portrait photography in the early 1930s. She's most famous for her studio portraits of the mid-1930s that made creative use of costumes and props.

Z

ZA Stands for Zeiss Alpha – a range of Sony lenses designed by Carl Zeiss.

Zone system

The Zone system is a systematic technique for calculating the best possible film exposure and development. It was formulated in around 1940 by photographers Ansel Adams (1902-84) and Fred Archer (1889-1963).

Zoom

A lens with a variable angle of view. On a zoom lens, the focal length can be changed while the focus remains the same. Typical zoom lenses have focal lengths between 17mm and 80mm.

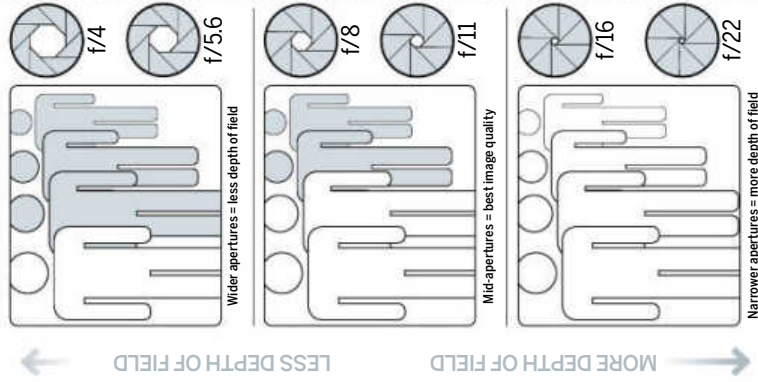
Zoom ratio

The relationship between the shortest and longest focal length setting of a zoom lens. For example, a 14-42mm lens has a zoom ratio of 3:1, or 3x; a 50–500mm lens has a zoom ratio of 10:1, or 10x.

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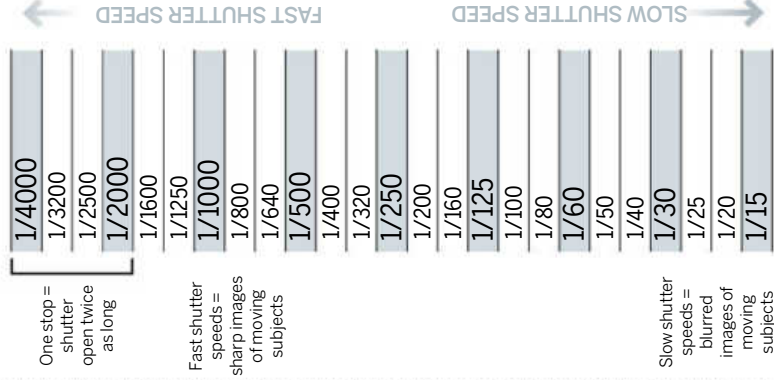
DEPTH OF FIELD EXPLAINED

The aperture you use is one of the key factors in dictating how much of the scene appears sharp. The narrower the aperture opening (and the larger the f-stop number) the more of the image will be in focus



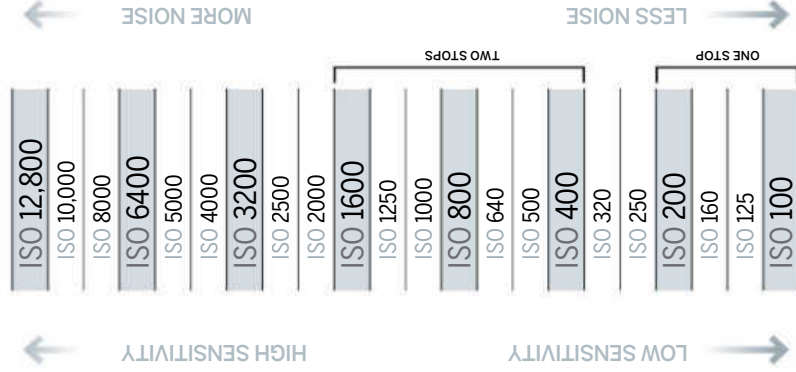
THE SPEED SCALE EXPLAINED

Just like aperture settings and ISOs, shutter speeds go in a fixed sequence, although sometimes different intermediate values are used



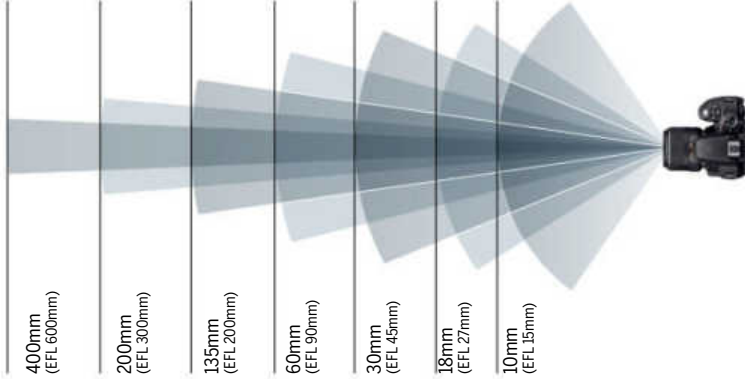
UNDERSTANDING THE ISO SCALE

ISO settings go up in fixed values, with intermediate settings available too. High ISOs can be useful in low light, although the 'noise' in the image increases



WIDE-ANGLE TO TELEPHOTO

The focal length of a lens gives an indication of its angle of view. Wide-angles have shorter focal lengths than telephotos. The effective focal length (EFL) depends on sensor size – this is given here for full-frame and APS-C-sized sensor cameras (in brackets)



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Learn key camera techniques and concepts with this indispensable take-anywhere guide to digital photography. With this handy book, you can start taking better photographs of anyone!

6 ADVICE-PACKED CHAPTERS

ESSENTIAL GUIDE TO TAKING GREAT PORTRAITS

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QUICK CAMERA REFERENCE

Key photographic concepts explained with easy-to-follow diagrams

2

CREATIVE PROJECTS

Over 50 inspirational images and the quick techniques you can use to recreate them

3

FLOW CHART FIELD GUIDES

Learn how to shoot virtually anyone with foolproof step-by-step flow diagrams

4

AT-A-GLANCE POSING GUIDES

Expert advice on how to pose children, brides, couples and more

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LIGHTING SET-UPS

24 professional studio lighting set-ups explained with detailed diagrams

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Your complete reference to photographic jargon